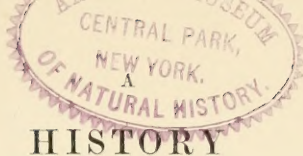


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HISTORY
OF
BRITISH BIRDS,
INDIGENOUS AND MIGRATORY.



HISTORY

OF

BRITISH BIRDS,

INDIGENOUS AND MIGRATORY:

INCLUDING

THEIR ORGANIZATION, HABITS, AND RELATIONS;
REMARKS ON CLASSIFICATION AND NOMENCLATURE;
AN ACCOUNT OF THE PRINCIPAL ORGANS OF BIRDS, AND
OBSERVATIONS RELATIVE TO PRACTICAL
ORNITHOLOGY.

ILLUSTRATED BY

NUMEROUS ENGRAVINGS.

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NATURAL HISTORY SOCIETIES OF BOSTON AND PHILADELPHIA, OF THE LYCEUM OF NEW YORK,
OF THE LITERARY AND PHILOSOPHICAL SOCIETY OF SOUTH CAROLINA, ETC.

VOL. V.

CRIBRATOIRES, OR SIFTERS.

URINATOIRES, OR DIVERS.

MERSATOIRES, OR PLUNGERS.

LONDON:

WILLIAM S. ORR AND CO., AMEN CORNER,
PATERNOSTER ROW.

1852.

TO HER MOST GRACIOUS MAJESTY

THE QUEEN,

THIS

HISTORY OF BRITISH BIRDS,

TO WHICH HER MAJESTY HAS BEEN GRACIOUSLY

PLEASED TO EXTEND HER PATRONAGE,

IS DEDICATED,

WITH THE MOST PROFOUND RESPECT,

BY HER MAJESTY'S

MOST FAITHFUL SUBJECT,

AND MOST DEVOTED SERVANT,

WILLIAM MACGILLIVRAY.

EDINBURGH, 1, WHARTON PLACE,
25th June, 1840.

PREFACE.

THIS, the last volume of my History of British Birds, contains descriptions of all our NATATORIAL or PALMIPED species, with exception of those of the families of the Anserinæ and Cygninæ, which have already been given. The habits of these birds, not generally so accessible to observation as most of the other families, I have studied, in so far as opportunities occurred, in their places of resort, among rocks and islands, on the sandy shores of the sea, in the firths and estuaries, and on the inland waters. Of many of them, however, and, in particular, of the very rare species which rank with us as stragglers, I have had little to say from my own observation, and not much from that of others.

The authors whose works have been most useful to me, and which I have generally consulted, are Montagu, M. Temminck, Mr. Selby, Mr. Yarrell, and Mr. Thompson. Some of these birds being common to Europe and America, I have also derived information from the writings of Audubon, as well as from my long-continued intercourse with that enthusiastic, acute, and most agreeably communicative naturalist and painter, who, moreover, supplied me with skins and specimens preserved in spirits. I have not, on the present occasion, to acknowledge the aid of many other personal friends, as most of my former contributors professed little acquaintance with either the Waders or Swimmers. My old and excellent friend, Dr. Laurence Edmondston, Balta Sound, Shetland, however, has continued to supply notices respecting the birds of his native islands. Some others, whose

names accompany their communications, have also contributed to the work. I must not omit to mention again, with very kindly feelings, the late Mr. Carfrae, and Mr. Fenton, taxidermists in Edinburgh, who, besides giving me intimation of everything rare or remarkable that came to them, also supplied me abundantly with bodies for dissection. Lastly, to Professor Jameson I am greatly indebted for the liberality with which he laid open to my inspection the valuable materials contained in the beautiful Museum of the University of Edinburgh, of which he has long been a distinguished ornament; and to Mr. Pengelly and Dr. Battersby, of Torquay, who furnished me with every facility for examining the excellent collection of the Birds of Devonshire, contained in the little Museum of the Natural History Society there.

Were it necessary, or likely to be useful, I should not hesitate to review these five volumes. I merely commend them to the public, for whom they have been written, and who will, in due time, discover their errors as well as accuracies. He who professes the greatest contempt for public opinion is always the most anxious for general applause. I should, no doubt, be very well pleased to be commended; but I do not now anticipate great distress from the most virulent censure. It is impossible to write a History of British Birds that shall please all, nor is it probable that any man in Britain possesses the knowledge necessary to produce a work of this kind making a very marked approach toward perfection. Accordingly, each of our many ornithologists, real and pretended, has a method of his own, one confining himself to short technical descriptions as most useful to students, another detailing more especially the habits of the birds, as more amusing to general readers, a third viewing them in relation to human feelings and passions, a fourth converting science into romance, and giving no key to the discrimination of the species, bringing his little knowledge of the phenomena under the dominion of imagination, and copiously intermingling his patch-work of truth and error with scraps of poetry. The plan of this work is very different from that of any of these, and is not by any means calculated to amuse the reader who desires nothing more than pleasant anecdotes.

or fanciful combinations, or him who merely wishes to know a species by name. It contains the only full and detailed technical descriptions hitherto given in this country. The habits of the species are treated of with equal extension in every case where I have been enabled to study them advantageously. The internal structure has been explained in so far as I have thought it expedient to endeavour to bring it into view, and, in particular, the alimentary organs, as determining and illustrating the habits, have been carefully attended to. If imagination has sometimes been permitted to interfere, it has only been in disposing ascertained facts so as to present an agreeable picture, or to render them easily intelligible by placing them in relation to each other.

W. MACGILLIVRAY.

ABERDEEN, CROWN STREET,
31st *July*, 1852.

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DIGESTIVE ORGANS OF SUTTERS



DIGESTIVE ORGANS OF DIVERS

Fig 1 Grub



Fig 2



Fig 5

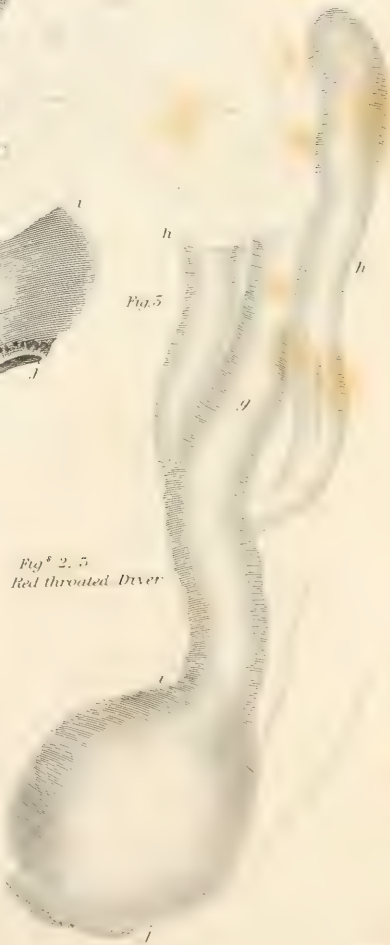


Fig 2, 5
Red throated Diver

EXPLANATION OF THE PLATES.

PLATE V. Digestive Organs of Sifters.

Long-tailed Hareld, Harelda glacialis.

<i>a, b, c</i> , the œsophagus.	<i>m, m</i> , lateral muscles of the trachea.
<i>b, c</i> , proventriculus.	<i>n, n</i> , sterno-tracheal muscles.
<i>d</i> , stomach.	<i>o</i> , the heart.
<i>d, e, f</i> , duodenum.	<i>p</i> , a portion of the liver, the rest re-
<i>g</i> , folds of intestine.	moved.
<i>h</i> , lower part of trachea.	<i>q</i> , air-cells.
<i>l</i> , tympanum, or bony and membranous enlargements at the lower extre- mity of the trachea.	

PLATE VI. Digestive Organs of Divers.

FIG. 1. *Digestive Organs of a Grebe, Podiceps.*

<i>a, b, c</i> , the œsophagus.	<i>d, e, f</i> , duodenum.
<i>b, c</i> , proventriculus.	<i>g</i> , the rest of the intestine.
<i>d</i> , stomach.	<i>i, j</i> , cloaca.

FIG. 2. *Proventriculus and Stomach of the Red-throated Diver, Colymbus
 Septentrionalis.*

<i>b, c</i> , proventriculus.	<i>d, e</i> , commencement of duodenum.
<i>d, d</i> , stomach.	

FIG. 3. *Rectum, Cloaca, and Cæca of the Red-throated Diver.*

<i>g</i> , intestine.	<i>i, j</i> , cloaca.
<i>h, h</i> , cæca.	

PLATE VII. Digestive Organs of Mersatorial Birds.

FIG. 1. *Digestive Organs of Wilson's Storm-Petrel, Thalasidroma Wilsoni.*

<i>a</i> , œsophagus.	<i>d</i> , stomach, extremely diminutive, and
<i>b</i> , <i>c</i> , proventriculus, enormously dilated.	directed forwards.
	<i>d</i> , <i>e</i> , <i>f</i> , duodenum.
	<i>g</i> , rest of intestine.

FIG. 2. *Digestive Organs of the Common Gull, Larus canus.*

<i>a</i> , <i>b</i> , <i>c</i> , œsophagus.	<i>g</i> , rest of intestine.
<i>b</i> , <i>c</i> , proventriculus.	<i>h</i> , cœca.
<i>d</i> , stomach.	<i>i</i> , <i>j</i> , cloaca.
<i>d</i> , <i>e</i> , <i>f</i> , duodenum.	

FIG. 3. *Digestive Organs of Lestris.*

<i>a</i> , <i>b</i> , <i>c</i> , œsophagus.	<i>g</i> , rest of intestine.
<i>b</i> , <i>c</i> , cloaca.	<i>h</i> , cœca.
<i>d</i> , stomach.	<i>i</i> , <i>j</i> , cloaca.
<i>d</i> , <i>e</i> , <i>f</i> , duodenum.	

DIGESTIVE ORGANS OF MERSITORIAL BIRDS

Fig 2 Gull

Fig 1

Fig 4

Fig 5 Lestres





INTRODUCTORY OBSERVATIONS.

THIRTY years ago, when I had already made some progress in examining the structure, and observing the habits, of the various Sea-Birds that frequented the wild tract of country in which I then resided, I perceived that a natural arrangement of the species would prove little in accordance with that of the great reformer, whose *Systema Naturæ* was the only book I possessed that treated of my favourite Ornithology. I therefore sketched a system for myself, and when I could not find a scientific name for a species, gave it one by which I might, until better informed, know it. This practice may account in part for a propensity, evinced in the earlier volumes of this work, occasionally to prefer what I esteemed appropriate names to those, often very inapt, imposed by authors. Some would-be legislators, enacting statutes having reference to nomenclature, have, perhaps properly enough, denounced all attempts to improve it by preferring a good name to a bad ; but, in their zeal for maintaining their own fancied pre-eminence, have very foolishly recommended that no regard be paid to the writings of any one who, whatever discoveries in structure or function he may disclose, however excellent his descriptions of form and habits may be, has had the presumption to set aside a name not to his taste, and use another. These persons had never observed such a rule themselves, and some of them seem to have forgotten their own precept. They appear to consider the naming of objects the essential part of Natural History. But, going beyond mere nomenclature, I found that every species that came under my

observation had a character of its own—that character consisting of a wide range of facts and events; and that the various species could be placed in a system according to affinities in many cases not difficult to be traced. Since that period I have enjoyed opportunities of extending my observations, and of confirming the views I had then adopted. The generalizations alluded to, and which many others have partially or wholly elaborated for themselves, are briefly expressed in the following Ordinal formulæ.

The observations necessary in introducing the Water Birds having already been given in the preceding volume, in which also the extended characters of the first order of these birds, and of two of its families, are contained, it is expedient to present here only the particulars necessary for connecting the two volumes. It may be remarked, however, that the study of these birds is beset with more obstacles than that of most of the other tribes—not on account of any difficulty in procuring specimens for dissection or external inspection, but because their habits cannot be satisfactorily observed without numerous visits, in varied circumstances, to the places—often wild coasts, magnificent precipices, and remote islands—which they frequent. I have possessed very favourable opportunities of making acquaintance with many of them, and the exemption from restrictions imposed by our ill-contrived and crime-producing system of game laws, the adventures, sometimes perilous, but always exciting and agreeable, experienced in boat-excursions, in scrambling on the shelves of precipices, in exploring maritime caverns, and in watching the various actions of these birds, always rendered the study of them peculiarly agreeable to me, as I believe it is to most practical ornithologists.

HISTORY
OF
BRITISH BIRDS,
INDIGENOUS AND MIGRATORY.

XVII. CBIBRATOIRES. SIFTERS.

XVIII. URINATOIRES. DIVERS.

XIX. MERSATOIRES. PLUNGERS.

ESSENTIAL CHARACTERS OF THE ORDERS.

ORDER XVII. CRIBRATOIRES. SIFTERS.

BILL covered with a cere, or soft skin, obtuse, and furnished with internal or marginal lamellæ. Tongue large, fleshy, lamellate or papillate on the sides. Œsophagus narrow, without distinct dilatation; proventriculus with a broad continuous belt of oblong or cylindrical glandules. Stomach an extremely muscular gizzard, with a dense epithelium, and two strong grinding-plates. Intestine long, rather wide; cæca long, of moderate width. Trachea, in the females of nearly uniform breadth, but in the males having diversiform enlargements at its lower extremity; no inferior laryngeal muscles. Feet with four toes, the anterior rather long, and connected by webs; the hind toe small and free, often with a lobe; claws generally small and obtuse. Wings convex; tail short.

ORDER XVIII. URINATOIRES. DIVERS.

Bill of moderate length, strong, tapering, compressed, pointed, opening rather widely, and more or less dilatable at the base. Tongue slender, pointed. Œsophagus wide, with moderately thick walls; proventriculus with a broad belt, not always continuous, of oblong glandules. Stomach rather large, roundish, with the muscular coat rather thick, the

epithelium moderately thick and rugous. Intestine long and rather wide, with moderate cæca ; rectum with a large globular cloacal dilatation. Legs generally very short, and placed far behind ; tarsus extremely compressed ; toes four, with the hind toe small, or three only, generally long, and connected by webs ; claws small and obtuse. Wings narrow, pointed, sometimes very small, but varying greatly in size ; tail extremely short, or of moderate length.

ORDER XIX. MERSATORES.

Bill of moderate length, generally stout, straight, compressed, more or less decurved at the end, opening to beneath the eyes. Tongue fleshy, rather narrow, tapering, pointed, horny beneath at the end. Œsophagus very wide throughout, with its walls thin ; proventriculus dilated. Stomach small, muscular, with large radiated tendons, and thick, dense, longitudinally rugous epithelium. Intestine rather long, narrow ; cæca very small, cylindrical ; rectum with a large globular cloacal dilatation. Legs of moderate length, or short, rather slender, not much compressed ; toes of moderate length, slender, connected by webs, spreading, the first very small, elevated, and free, or wanting ; claws small, arcuate, rather obtuse. Wings very long, rather narrow, much pointed ; tail generally moderate.

The differences of these three orders, as to habits, as well as structure, are so obvious, that he who, residing on the sea-shore, and taking daily note of some of the species of which they are composed, is not struck by them, must be peculiarly unobservant, or unaccustomed to compare the objects that attract his notice. High in air, advancing on gently-arched and out-spread wings that winnow a passage for them over the far-spread sea, is seen advancing from the north a flock of large birds, that are observed as they draw nearer to be

arranged in lines, ever undulating and changing figure, while their clear cries seem to express their joy at having escaped the dangers of their long passage over the isleless waste of waters. Now they descend, mingle their ranks, wheel in dislocated bands, unite, sweep along, and, clamorous in their joy, at length alight on the open pasture. Having rested awhile, and plumed themselves, they begin to move about in search of food, walking sedately and with decurved necks directing their strong bills to the ground, from which they wrench the roots of the grasses and pluck the herbage. Prudent, however, as they well need to be in an unexplored tract, and careful of their safety, they neither scatter about at random nor leave themselves subject to surprise. Should a suspicious object present itself, one of them presently erects himself, and emits a warning cry ; on hearing which they all run together, raise their necks to their full stretch, and carefully inspect the ground. Should the danger be imminent they run a few paces forward, spreading their large wings, ascend into the air, and betake themselves to some distant place. Here, close to the rocks on the shore, a large bird has abruptly emerged from the deep, and is gliding smoothly and rapidly along, his body half-sunk in the water, and his bill directed toward it. As suddenly he disappears, gliding noiselessly with vigorous spring into the bosom of the sea. You watch his re-appearance perhaps a whole minute or more, and there, at a great distance, he emerges, bearing in his bill a moderate-sized fish, which he soon swallows with erected neck and widened throat. Now sweeps into view from behind the headland a large bird, gliding on outspread wings, now inclining for a space to this side, now to that, then shooting along in a curve, at one time skimming the water, at another ascending to a considerable height, and now and then emitting a singular cry, somewhat resembling the sounds of human laughter. He suddenly descends, hovers with upraised wings, lets down his feet, with which he seems to pat the water, dips his beak and head into it, and, exulting, carries up a small fish, which he securely disposes of. He then alights, sitting buoyantly on the sea, but finding that by swimming he

cannot keep his place in the current, he stretches his large wings, and flies off to a distant spot, where several birds are hovering over the waves, dipping at intervals, and emitting their harsh screams, they being engaged with a shoal of fish. Now, these three birds are good enough representations of the three orders characterized above.

The CRIBRATOIRES, moreover, feed on vegetable substances, many on mollusca, crustacea, and insects, and some on fishes. They form a rude nest, generally on the ground, and lay numerous eggs, which are light, or of some light tint, and without spots. The young, covered with stiffish down, are able to run, swim, and dive presently after exclusion, and are carefully conducted by their mother, or for a time fed by her. The males are larger and handsomer than the females, which the young resemble in their first plumage. These birds are more useful to man than the other aquatic species, many of them affording savoury food ; some feathers, quills, or down ; and several, which have been domesticated, being of nearly as much service as the analogous Gallinaceous or Rasorial Birds.

The URINATOIRES, on the other hand, are essentially piscivorous, though several species feed on insects, reptiles, crustacea, and other small aquatic animals, and some on mollusca. They nestle on the ground or on rocks ; but some of them deposit their eggs in holes, or on the bare shelves of cliffs, without any nest. Their eggs are generally few, frequently a single egg of enormous size is all they lay ; but nothing general can be said of their form or colouring. The young, in many cases, remain for some time in the place where they have been hatched. The males are larger than the females. Nearly all the species are most expert swimmers and divers, using their wings as well as their feet for propelling themselves under water. The backward position of their feet renders a very inclined or nearly erect position on land necessary to them, and some of them are quite incapable of walking efficiently. Some among them are also incapable of flying ; but even those which have very small wings make them the instruments of a rapid and sustained flight.

The MERSATORES are birds of less compact form, lightness, and even buoyancy, as well as strength, being essential to their nature. Their plumage is of looser texture and more bulky. Their long wings are fitted for a light, gliding, bounding flight, very unlike the straightforward, laboured, though quick aerial progression of the Urinatores. They sit lightly on the water, swim, though not rapidly, but are incapable of diving, and never enter into the deep otherwise than momentarily by plunging or dipping. The larger species are in a measure omnivorous, in so far as regards animal food; the smaller feed chiefly on small fishes and crustacea. They usually nestle on the ground, laying from three to five spotted eggs; but some which lay in holes or crevices have white eggs. The young, at first densely covered with down, can walk and run, as well as swim, from the first; but usually remain some time in or about the nest, or conceal themselves in suitable places. Most of the birds of this order walk very expertly. The males are little larger than the females, and generally the sexes are coloured alike; but the young have more mottled and duller colours than the adult. Their flesh is not esteemed, and none of them have been domesticated.

XVII. CRIBRATORES. SIFTERS.

THE detailed characters of this extensive Order having been already given in the Fourth Volume, and two of the Families—the *Anserinæ* and *Cygninæ*—there described, we have now to introduce the Family of *Anatinæ*, or Fresh-water Ducks.

ANATINÆ.

DUCKS AND ALLIED SPECIES.

THERE are no strictly definable limits between the *Anserinæ* and the present group, many species being nearly equally referable to either. However distinct a common Grey Goose and a Teal may appear, they are connected by species so graduating as to leave no palpable line of separation. Yet the two groups, taken in the mass, present obvious differences, and may at least be conveniently admitted as distinct. But all Ducks, popularly so called, are not admitted into the family of the *Anatinæ*; those which chiefly frequent the sea, and feed on marine mollusca and fishes being kept apart to form the group of the *Fuligininæ*, or Sea Ducks. The general characters of the *Anatinæ*, or Fresh Water Ducks, are the following:—

Their body is oblong or elliptical, of nearly equal height and breadth; the neck usually rather long and slender; the head moderate, oblong, compressed, rounded above. The bill about the length of the head, or shorter, higher than broad at the base, gradually depressed, and generally be-

coming a little broader toward the end, sometimes more or less rearcuate; the upper mandible with the frontal angles moderate and pointed, the ridge flattened at the base, the sides convex toward the end, the unguis oblong, decurved, and rather small; the upper mandible internally concave, with a medium prominent line, and on each side a series of transverse, thin lamellæ, the outer extremities of which project more or less. There are similar, but smaller lamellæ, on the sides of the lower mandible. The mouth is rather narrow; the tongue fleshy, deeply grooved above, with lateral series of bristles, and a thin, broadly rounded tip. The œsophagus is of moderate width, or rather narrow, the stomach a very large, transversely elliptical gizzard, with very large muscles, a thick rugous epithelium, and somewhat concave grinding surfaces; the intestine very long, of moderate width, with very long cœca. The trachea is of nearly uniform width; the inferior larynx has an osseous enlargement, generally transverse, and bulging on the left side.

The nostrils are oblong, and of moderate or small size; the eyes small, as are the apertures of the ears. The legs are generally short, sometimes of moderate length, or rather long; the tibia bare for a very short space; the tarsus compressed, reticulated, and furnished with very small anterior scutella; the hind toe very small, elevated, with a narrow lobiform membrane; the inner toe much shorter than the outer, which is little exceeded by the third; the interdigital membranes full; the claws small, little arched, compressed, rather acute, that of the middle toe having its inner edge expanded.

The plumage dense, firm, elastic, blended; the feathers of the head and upper neck small, of the other parts large; the scapulars large; the wings of moderate length, rather narrow, pointed, the first and second quills being longest; the inner secondaries oblong; the tail moderate, of more than twelve feathers.

The Anatinae feed essentially on stems and roots of grasses and other plants, leaves, and seeds, but also on mollusca, insects, worms, and occasionally reptiles. They are mostly gregarious, and migratory. The males are always larger, and usually differently coloured. The outer webs of some of the

secondary quills are highly coloured, with silky or metallic lustre, forming a patch named the speculum, or wing-spot. Toward the end of summer, the males assume the plumage of the females, but in autumn resume their proper colours. During the breeding season, the males generally continue with the females. The nest is placed on the ground, or in holes ; rarely on trees. The eggs are numerous, white, greenish, or of some uniform light tint. The young, covered with stiffish down, are active from the first, and presently betake themselves to the water, where they swim and dive with the greatest agility.

Representatives of this family occur in all climates. They frequent marshes, wet places, lakes, and rivers, procure a great part of their food by reaching at it under the water, but seldom dive, unless in sport, or to elude their enemies. Their flesh is esteemed as food, and generally has a high flavour.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. TADORNA. SHIELDUCK.

Bill as long as the head, higher than broad at the base, gradually depressed, considerably rearcurate, and becoming a little broader toward the end, which is rounded ; upper mandible with the ridge flattened at the base, on which there is generally a fleshy knob, the unguis oblong, rather abruptly bent downwards and inwards, the sides convex, at the base nearly erect, the edges rearcurate, the lamellæ thin, and not appearing beyond the margin ; legs rather short, tibia bare for a very short space ; tarsus compressed, with very small anterior scutella ; inner toe much shorter than the outer, which is nearly equal to the third ; interdigital membranes full ; claws small, compressed, rather blunt ; feathers of the head and upper neck short and silky ; wings with an obtuse tubercle, broad, pointed, the second quill longest ; tail moderate, nearly even, of fourteen weak rounded feathers.

1. *Tadorna Casarca*. *Ruddy Shieldduck*. Bill slightly rearcuate, without basal protuberance, and, together with the feet, black; plumage mostly light yellowish-red; hind part of back and tail, and a narrow ring on the neck, greenish-black; wing-coverts white.

2. *Tadorna Vulpanser*. *Burrow Shieldduck*. Bill bright red, considerably rearcuate, with a fleshy knob at the base; feet flesh-colour; head and upper neck greenish-black, lower neck white; fore part of body light red, the rest white, excepting a medial band on the breast and abdomen, a patch on each side of the back, and the primary quills and coverts, which are black.

GENUS II. ANAS. DUCK.

Bill about the length of the head, higher than broad at the base, gradually depressed, becoming a little broader toward the end, and very slightly rearcuate; upper mandible with the frontal angles short and pointed, the ridge flattened and gradually narrowed, the unguis obovate, decurved, the sides convex, at the base nearly erect, the lamellæ with their outer ends thin and scarcely apparent externally; legs short, tibia bare for a very short space; tarsus short, compressed, anteriorly with small scutella, and a shorter outer series, continuous with those of the outer toe; hind toe very small, with a very narrow membrane; fourth toe a little shorter than the third; interdigital membranes full; claws small, compressed, rather blunt; feathers of the head and upper neck short and silky; wings of moderate length and breadth, pointed, the second quill longest; inner secondaries elongated, broad, rather pointed; tail short, much rounded, of eighteen acute feathers.

1. *Anas Boschas*. *Common Duck*. Bill reddish-yellow, tinged with green; feet orange; head and upper part of neck glossy deep green; a narrow white collar; breast dark brownish-chestnut; speculum bluish-green and purple, margined before and behind with black and white; tail-feathers twenty, the four medial recurved, compressed, black.

2. *Anas glocitans*. *Bimaculated Duck*. Bill greenish-

yellow at the base, olive-brown toward the end; feet brown; upper part of head and hind-neck deep chestnut-brown; sides of the head and upper neck glossy green; on the fore part of the cheek an oblong reddish-brown patch, and another on the side of the neck; breast brownish-red, spotted with black; speculum deep green, glossed with purple, and margined behind with white; tail-feathers all straight, the two medial black.

GENUS III. QUERQUEDULA. TEAL.

Bill nearly as long as the head, considerably higher than broad at the base, gradually depressed, but scarcely widened toward the end, it being comparatively slender, with the margins nearly parallel; upper mandible with the frontal angles short and pointed, the ridge broad and concave at the base, gradually narrowed, the unguis small, obovato-oblong, decurved at the end, the sides convex, erect at the base, the lamellæ projecting a little from the base to two-thirds of the length of the bill, then shortened; legs very short; tarsus compressed, with small anterior scutella; hind toe with a very narrow membrane; outer toe considerably shorter than the third, which is longer than the tarsus; interdigital membranes emarginate; claws small, compressed, rather acute; feathers of the head and upper neck short; scapulars elongated and acuminate; inner secondaries long and tapering; wings narrow, pointed, of about twenty-five quills, the first and second longest; tail tapering, of sixteen stiffish, tapering feathers.

1. *Querquedula Crecca*. *European Teal*. A longitudinal ridge of narrow decurved feathers on the head and nape; head and upper neck chestnut-brown, with a green patch behind the eye, margined beneath with black and white; speculum black externally, green internally, edged with black; under the tail a black and two cream-coloured patches.

2. *Querquedula Circia*. *Garganey Teal*. A white streak from over the eye to half-way down the neck; scapulars black, with a medial white streak; wing-coverts bluish-

grey; speculum dull green, margined on both sides with white.

3. *Querquedula strepera*. *Gadwall Teal*. Upper part of the head and nape dusky, with small reddish-brown markings; lower neck all round and part of the back dusky, with semicircular white lines; middle of the back, scapulars, and sides finely undulated with dusky-grey and reddish-white; smaller wing-coverts grey, barred with pale reddish; middle coverts deep chestnut-red; speculum black and white.

4. *Querquedula acuta*. *Pintail Teal*. Head and throat dusky brown; a longitudinal band of greenish-black on the hind-neck, and two white bands continuous with the white of the lower parts; back and sides finely undulated with grey and white; wing-coverts grey; speculum green and black, margined anteriorly with red and posteriorly with white.

GENUS IV. RHYNCHASPIS. SHOVEL-BILL.

Bill longer than the head, much higher than broad at the base, gradually depressed and widened toward the end, the breadth of which is double that of the base; upper mandible with the ridge broad and concave at the base, gradually narrowed, the sides convex, erect at the base, the very numerous, elongated, slender lamellæ projecting conspicuously from the base to near the broadest part; legs very short; tarsus compressed, with small anterior scutella; hind toe with a very narrow membrane; outer toe a little shorter than the third, which is longer than the tarsus; interdigital membranes emarginate; claws slender, compressed, acuminate; feathers of the head and upper neck short and blended; scapulars elongated and acuminate; inner secondaries long and tapering; wings narrow, pointed, of about twenty-five quills, the first and second longest; tail small, much rounded, of fourteen stiffish, tapering feathers.

1. *Rhyncaspis clypeata*. *Blue-winged Shovel-bill*. Breast purplish-chestnut; back greenish-black; wing-coverts light blue; scapulars white, greenish-black, and pale blue; speculum bright green, margined anteriorly with white.

GENUS V. MARECA. WIGEON.

Bill considerably shorter than the head, higher than broad at the base, gradually depressed and narrowed toward the end; upper mandible with the frontal angles very short and obtuse, the ridge broad and flattened at the base, the sides convex, erect at the base, the unguis rather large, obovate, decurved at the end, the extremities of the numerous lamellæ projecting a little about the middle of the bill; legs very short, and the other characters as in *Querquedula*.

1. *Mareca Penelope*. *European Wigeon*. Bill pale blue, with the tip black; upper part of head reddish-white; cheeks and upper neck brownish-red, dotted with black; fore part and sides of the neck light vinaceous; upper parts and sides of the body finely barred with white and dark grey; wings grey, with a large patch of white; speculum green, with an anterior and a posterior band of black.

TADORNA. SHIELDUCK.

It may at first sight seem difficult to determine whether our common Shelduck be actually a Duck at all, it having very much of the appearance of a Goose; and a close inspection rather increases than removes our perplexity. If we refer to authorities, we find some on one side, and some on the other. The bill, however, is decidedly that of a Duck, for besides increasing in breadth toward the end, it has a small, oblong unguis, not only smaller and differently formed from that of any Goose, but moreover remarkably incurved at the end; and, although the genus approaches to *Chenalopex* both in form and colouring, I think we may safely place it in the group of *Anatinae*, assigning it there a station indicative of its approximation to the *Anserinae*. The body is large, full, rather elongated, about the same height and breadth; the neck rather long and slender; the head moderate, oblong, compressed, and rounded above.

Bill as long as the head, higher than broad at the base, gradually depressed, becoming a little broader toward the end, and considerably rearcuate; upper mandible with the lateral sinuses semicircular, the upper occupied by a fleshy knob, the dorsal line sloping to beyond the nostrils, then a little concave; the ridge flattened and gradually narrowed, the unguis oblong, rather abruptly bent downwards and inwards, with the end sharp-edged and abrupt, the sides convex, at the base nearly erect, the edges rearcuate, the lamellæ with their outer ends thin and not appearing beyond the margin, which is somewhat expanded and membranous about a third from the end; the nasal sinus moderate, elliptical, close to the ridge; lower mandible considerably rearcuate, with the intercrural space very long, narrow, and bare, the crura slender, with their sides convex, gradually sloping more outwards, the unguis somewhat elliptical, larger than the upper, little convex, broadly rounded at the end.

Mouth rather narrow; anterior palate concave, with a median prominent line, and on each side a series of trans-

verse, thin, elevated lamellæ, which are much larger and more widely set toward the end. Tongue fleshy, deeply grooved above, with lateral series of bristles, and a thin broadly rounded tip. Œsophagus of moderate width. Stomach a very large, transversely elliptical gizzard, placed obliquely, with very large muscles, thick rugous epithelium, and thickened grinding plates. Intestine very long, and of moderate width; cæca very long.

Trachea of nearly uniform width, but a little enlarged within the furcular space, then narrowed; the lower larynx with two unequal irregularly roundish extremely thin bony sacs, of which that on the left side is much larger. Bronchi of moderate size.

Nostrils oblong, moderate, in the lower and fore part of the membrane. Legs short; tibia bare for a very short space; tarsus short, compressed, with very small anterior scutella; hind toe very small, elevated, with a lobiform membrane; inner toe much shorter than the outer, which is nearly equal to the third, the latter rather longer than the tarsus; all scutellate above; interdigital membranes full. Claws small, compressed, little arched, rather blunt, that of the middle toe expanded internally.

Plumage dense, soft, and blended; feathers of the head and upper-neck short and silky, of the other parts large; scapulars large, oblong, rounded. Wings rather long, broad, pointed; the second quill longest, the first little shorter; inner secondaries elongated, oblong. Tail moderate, nearly even, of fourteen weak, rounded feathers.

The males differ from the females only in being larger. They continue with the female and young. The food consists of vegetable substances and shell-fish. The eggs are numerous, ovate, glossy, and white or cream-coloured. The species of this genus, being of a large size, and rather bulky proportions, bear a considerable resemblance to some of the Geese, especially to those of the genus *Chenalopex*, and might with almost equal propriety be referred to that family, with which they further agree in the similarity of plumage of the two sexes, whereas in the other *Anatinae*, the males differ from the females in this respect.

TADORNA CASARCA. THE RUDDY SHIELDUCK.

RUDDY GOOSE. GREY-HEADED GOOSE.

Anas Casarca. Linn. Syst. Nat. III. Append. 224.*Anas Casarka.* Lath. Ind. Ornith. II. 844.*Anas cana.* Lath. Ind. Ornith. II. 840.*Canard Kasarka.* *Anas rutila.* Temm. Man. d'Orn. II. 832.Ruddy or Casarka Shieldrake. *Tadorna rutila.* Selby, Illust. II. 293.*Casarca rutila.* Bonap. Comp. List, 56.

Male twenty-three inches long, with the bill slightly re-arcuate, destitute of basal protuberance, the wing with a blunt tubercle, the tail of fourteen feathers ; the bill and feet black ; the head and upper half of the neck pale grey, the latter tinged with yellow ; a narrow collar of greenish-black ; the rest of the neck, and the upper and lower parts of the body, light yellowish-red ; the hind part of the back and the tail greenish-black ; the wing-coverts white ; the primary quills and coverts black, the secondary quills deep purplish green. Female smaller, similarly coloured, but without grey on the head, it being pale yellow, and the dark collar wanting.

MALE.—This beautiful bird is intermediate in form between the Egyptian Goose and the Shielduck, and in its mode of colouring resembles both. Its legs being a little longer, and its bill much less rearcuate, than those of the latter, it might, perhaps, with propriety be referred to the same genus as the former. But as many authors have placed it here, and as I am not acquainted with the structure of its inferior larynx, it may as well remain. It is one of those birds which one might call a Duck, and another, with equal propriety, a Goose.

The bill is nearly as long as the head, much higher than

broad at the base, gradually depressed, of nearly equal breadth throughout; the upper mandible with its outline descending and concave, the unguis oblong, much decurved and abrupt at the end, the edges nearly straight, and concealing the lamellæ; the nasal sinus moderate, elliptical, sub-basal, close to the ridge; the lower mandible slightly rearcuate, with the intercrural space very long and narrow, the unguis somewhat elliptical, the tip rounded.

The nostrils are oblong, a quarter of an inch in length; the eyes rather small. The legs are short; the tibia bare for four-twelfths of an inch; the tarsus short, compressed, covered with small angular scales, and having about twenty anterior scutella. The first toe is very small and elevated, with a small lobiform membrane, the outer toe nearly as long as the third; the interdigital membranes a little emarginate. The hind claw is very small and curved; the outer and inner compressed, the third internally expanded.

The plumage is full, soft, and blended; the feathers of the head and upper neck small and oblong. The wings, which have a rounded knob at the flexure, are long, extend, when closed, nearly to the end of the tail, and are broad and pointed, the second quill longest; the secondaries broad and rounded, as are the inner elongated feathers. The tail is rather short, rounded, of fourteen moderately firm rounded feathers.

The bill is black; the iris "yellowish-brown," the feet black; the general colour of the plumage is a light yellowish-red. About the middle of the neck is a narrow ring of greenish-black, above which the colour of the plumage is chiefly greyish-white. The wing coverts are white; the primary quills and their coverts black; the secondary quills deep green, tinged with purple; but the inner light red on the outer web, and grey on the inner. The hind part of the back and the tail are black, tinged with green.

Length to end of tail 23 inches; wing from flexure 15; tail 5; bill along the ridge $1\frac{3}{4}$; along the edge of lower mandible $1\frac{11}{12}$; tarsus $2\frac{2}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{6}{12}$, its claw, $\frac{4}{12}$; third toe $2\frac{1}{12}$, its claw $\frac{5}{12}$; fourth toe $1\frac{1}{12}$, its claw $\frac{3}{12}$.

FEMALE.—The female, which is smaller, is similar to the male, but with the tints less deep and the collar wanting. A specimen from India, in my collection, has the bill and feet black; the head greyish-white, tinged with reddish-yellow; the general colour of the plumage light red, fainter anteriorly; the middle of the back, under the scapulars, minutely undulated with dusky; the rump and tail greenish-black; the wing-coverts white, primary quills black; speculum deep green; lower wing-coverts yellowish-white.

Length to end of tail 22 inches; wing from flexure 14; tail 5; bill along the ridge $1\frac{9}{12}$; tarsus $2\frac{2}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{3}{12}$; middle toe $2\frac{1}{12}$, its claw $\frac{5}{12}$.

HABITS.—This species is very extensively dispersed, being found in India, Persia, and the northern parts of Asia; at the Cape of Good Hope, and in other portions of Africa; in Austria, Hungary, and Russia. M. Temminck informs us that “it nestles in the holes of the rocks which border the great rivers of Russia, in hollow trees, or in the deserted holes of other animals along the banks; and lays eight or nine white eggs,” in which respects it resembles our common Shelduck. On the western coasts of Europe it sometimes appears as an accidental straggler, and a few individuals have been obtained in England. One was shot at Bryanstone, near Blandford, in Dorsetshire, in the severe winter of 1776, and is now in the Newcastle Museum. Another, also killed in the south of England, is in the possession of Mr. Selby; and one shot at Ikhn, near Orford, in January, 1834, is the property of Mr. Manning, of Woodbridge. In the Natural History of Orkney it is stated “a specimen of this rare Duck was shot in Sanday, by Mr. Strang, in October, 1831.”

TADORNA VULPANSER. THE BURROW SHIELDRUCK.

SHIELDRAKE. SKELDRAKE. SKELGOOSE. SKEELING GOOSE. BURROW DUCK.
ST. GEORGE'S DUCK. SLY GOOSE. BERGANDER. STOCKANNET.

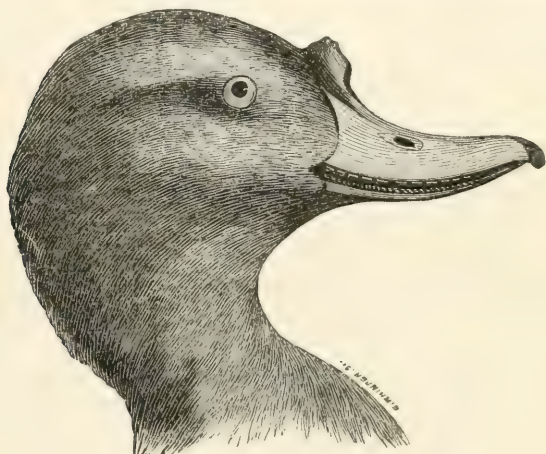


FIG. 60.

Anas Tadorna. Linn. Syst. Nat. I. 195.

Anas Tadorna.. Lath. Ind. Orn. II. 854.

Sheldrake. Mont. Orn. Dict. and Suppl.

Canard Tadorne. Anas Tadorna. Temm. Man. d'Orn. II. 833.

Common Sheldrake. Tadorna Vulpanser. Selb. Illustr. II. 289.

Tadorna Bellonii. Common Sheldrake. Jen. Brit. Vert. An. 229.

Tadorna Vulpanser. Bonap. Comp. List, 56.

Male twenty-four inches long, with the bill considerably rearcuate, and having a fleshy knob at the base, the wing with a blunt tubercle, the tail of fourteen feathers; the bill bright red, the feet flesh-coloured; the head and upper neck black glossed with green, the lower neck white; the fore part of the body light red; the rest of the plumage white, excepting a medial band on the breast and abdomen, a broad patch on each side of the back including the scapulars, and the primary quills

and coverts, which are black; the outer secondaries green, some of the inner externally red, and the lower tail-coverts brownish-yellow. Female smaller, similarly though less brightly coloured, but without the fleshy knob on the forehead.

MALE IN WINTER.—This species, the largest, and one of the most beautiful of our native Ducks, has by some been considered as belonging to the Anserine rather than the Anatine family; but the form of its bill, the narrow incurved unguis of the upper mandible, the delicate lamellæ, the expansion of the lower part of the trachea, and other characters, clearly evince its connection with the latter group. It is not much inferior in size to the Black-faced Bernicle Goose, and has the body large, full, somewhat lengthened, and well-balanced on the legs; the neck rather long, and narrowed above; the head moderate, oblong, compressed, and rounded.

The bill is about the length of the head, much higher than broad at the base, gradually depressed, becoming a little wider toward the end, considerably rearcuate. The angle at the base of the ridge is occupied by a fleshy coloured tubercle, which is anteriorly carinate; the lateral sinuses broadly rounded, the ridge broad at the base, gradually narrowed, the dorsal line descending to beyond the nostrils, then a little concave, the sides erect at the base, gradually more sloping, the edges membranous, the unguis oblong, small, much curved and abrupt at the end; the lamellæ not projecting; the nasal sinus moderate, elliptical, sub-basal, close to the ridge; the lower mandible considerably rearcuate, with the intererural space very long and narrow, the unguis somewhat elliptical, but with the sides nearly parallel; the tip rounded.

The mouth is rather narrow, measuring eight-twelfths across. The posterior aperture of the nares lanceolate, margined with acicular papillæ. The anterior palate concave and recurved, with a medial soft ridge, on the basal half of which are some compressed papillæ, toward the end numerous minute, oblique striæ, and on each side about seventy-five transverse, thin, elevated lamellæ, of which the anterior are larger and more distant, the outer ends of all not thickened, nor at all resembling those of the Geese, but many of them

tapering to a fine point, and projecting considerably beyond the margin. The lamellæ of the lower mandible are much more numerous, and exceedingly delicate, there being nearly two hundred externally. The tongue is fleshy, an inch and ten-twelfths long, with very numerous acicular papillæ at the base; laterally with two series of fibrils, larger and stiffer in its basal half, two shorter series above, a medial groove, the tip very thin, concave, horny, somewhat abrupt.

The trachea, twelve inches in length, is considerably flattened, at first only three-twelfths, but near the lower end four-and-a-half-twelfths in breadth, finally becomes round and contracts to three-twelfths. Several of the rings here unite, and form in front a small bulge, narrower in the middle, and opening into two very thin, long, irregularly-rounded expansions, projecting outwards and backwards, but not meeting behind, that on the right side much larger, its greatest diameter one inch. The number of rings is an hundred and thirty-eight, besides six which are united. The bronchi, moderate, and of twenty half rings, come off at the distance of a quarter of an inch from each other.

The nostrils are oblong, a quarter of an inch in length; the eyes rather small. The legs are short; the tibia bare for four-twelfths of an inch; the tarsus short, compressed, covered with small angular scales, and having about twenty anterior scutella. The first toe is very small, elevated, with ten scutella, and a lobiform membrane; the second with thirty, the third thirty-four, the fourth forty-four scutella. The hind claw very small and curved; the outer and inner compressed, the third obliquely expanded internally; the membranes full.

The plumage is full, soft, blended; the feathers of the head and upper neck small and silky, of the lower neck and lower parts oblong, and rather abrupt; the scapulars large and oblong. The wings, which have a rounded knob at the flexure, are long, extend when closed almost to the end of the tail, and are broad and pointed, with twenty-eight quills; the primaries tapering, the second nearly a quarter of an inch longer than the first; the outer secondaries of moderate breadth, and rounded, as are the inner, which are elongated.

The tail is rather short, slightly rounded, of fourteen soft rounded feathers, of which the lateral are three fourths of an inch shorter than the longest.

The bill is of a bright carmine tint, as is the knob at its base, the unguis dusky, with the sides horn-colour. The eyes are brown. The feet flesh-coloured. The claws dusky, but pale along the ridge. The head and upper-neck all round are glossy blackish-green, with purplish reflexions in some lights; a broad band or ring of white succeeds, and then another of orange-red encircles the fore part of the body. The rest of the lower parts are white, with the exception of a medial longitudinal band of glossy black on the breast and abdomen, becoming broader behind; the feathers below the tail sienna-yellow. The middle and hind part of the back white, as is the tail, of which, however, the tips of the six middle feathers are black. The inner scapulars are white, the outer black. The smaller wing-coverts and secondary coverts are white; the alular feathers white, at the end black; the primaries and their coverts greyish-black. The outer secondary quills are glossy-green externally, white at the base internally, and black toward the end; three of the inner are light-red externally, white internally, with a dusky band at the junction of the two colours; the rest white.

Length to end of tail 24 inches; extent of wings 46; wing from flexure $13\frac{1}{2}$; tail 5; bill from the base of the tubercle 2; along the edge of lower mandible $2\frac{2}{12}$; tarsus $1\frac{0}{2}$; hind toe $\frac{7}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{7}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{2}{12}$, its claw $\frac{5}{12}$; fourth toe 2, its claw $\frac{3}{12}$.

FEMALE.—The female, which is much smaller than the male, differs in wanting the knob at the base of the upper mandible, there being in its place a very slender soft ridge; and in having the colours somewhat duller, although similarly distributed.

Length to end of tail $21\frac{1}{2}$ inches; extent of wings 40; wing from flexure 12; tail 4; bill along the ridge 2; along the edge of lower mandible $2\frac{2}{12}$; tarsus 2; hind toe $\frac{7}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{7}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{2}{12}$, its claw $\frac{4}{12}$; fourth toe 2, its claw $\frac{3}{12}$.

HABITS.—This very beautiful bird, which is permanently resident in Britain, is met with sparingly along our coasts, in most places suitable to its habits, from the south of England to the Shetland Islands on one side, and the Northern Hebrides on the other. On the west coast of the latter, where there is much sand, it is not uncommon in spring and summer, when it resorts to the shallow fords and bays ; but in autumn disappears. At that season, however, and in winter, it is met with in the eastern and southern parts of Scotland as well as in England, in both which countries many individuals remain to breed. It seems to continue in pairs all the year round, although frequently in winter and spring large flocks may be seen, in which the families are intermingled. I have never met with it inland, or in fresh water near the coast ; but have seen it feeding in wet pastures near the sea, although more frequently on wet sands, and am unable, from my own observation, to say of what its food consists. Various authors allege that it feeds on shell-fish and marine plants ; but this, judging from the structure of its bill and its general appearance, I felt inclined to doubt, until I met with Mr. Thompson's statement. It walks with ease, in the manner of the Wild Geese, but with quicker steps, and flies with speed, in the manner of the Mallard and other Ducks, with more rapid beats of the wings than the Geese. In spring, and the early part of summer, it has a habit of erecting itself, thrusting forward its neck, and shaking its head, as if endeavouring to swallow or get rid of something too wide for its gullet ; but this appears to be merely an act of attention to the female. Being shy and vigilant, and frequenting open places, it is not easily approached, unless when breeding.

The nest is always placed in a hole in the sand, or sandy pasture near the shore. In places where there are rabbits, it selects a deserted burrow, which it enlarges ; but I have known it to breed in an island on which there were no other quadrupeds than seals, and still the nest was in a burrow, which it must have made for itself. Besides dry grass and other herbage, it employs the down plucked from its own breast in constructing its nest. The eggs, from eight to

twelve, are of an oval form, rather pointed at one end, smooth, glossy, and thin-shelled, of a white colour, slightly tinged with reddish; their length from two inches and eleven-twelfths to two inches and eight-twelfths, and their breadth an inch and ten or eleven-twelfths. The male continues in the neighbourhood of the nest during incubation, and is said occasionally to take the place of the female. The young presently betake themselves to the sea, under the guidance of both their parents, who are remarkably attentive to them, and endeavour to screen them from danger by drawing the attention of their pursuers toward themselves, in the manner employed by many other birds.

This species, although maritime, being capable of living in a semi-domesticated state on fresh-water ponds, where it is highly ornamental, the eggs are sometimes taken and placed under a hen. The young thus obtained feed on seeds, grass, and the ordinary substances given to domestic poultry; but are apt to ramble, and at length to fly away. These domesticated birds very seldom breed. Montagu states that a nobleman informed him, "he had one instance only in several years, although they had the range of a very extensive canal," and Mr. Selby mentions the occurrence of another in his neighbourhood. On the other hand, it has been known, according to the former of these naturalists, "to breed with the common Duck, in Lord Stanley's menagerie."

It is said to be generally dispersed over the maritime districts of Europe, but more especially the northern and western.

YOUNG.—When about a week old, the bill is blackish-brown, with the lower mandible yellowish, and the unguis reddish-yellow. The feet brownish-green, the claws brown at the base, whitish toward the end. The down is moderately long, rather dense, stiffish; the general colour white; the top of the head, a line down the back of the neck, the upper part of the back, the proximal part of the wings, the middle of the back down to the tail, and a spot above the thigh on each side, together with a small spot on the outer part of the tibia near the bare portion, blackish-brown.

When fledged, the young, according to M. Temminck, "have the forehead, the face, the fore and lower part of the neck, the back, and the lower parts white ; the head, cheeks, and nape brown, dotted with whitish ; the scapulars of a blackish-grey, bordered with pale grey ; the small coverts of the wings white, bordered with grey ; the tail terminated by greyish-brown ; bill reddish-brown ; feet of a livid grey." I have not examined them in this state ; but in winter I find them as follows :—

YOUNG IN WINTER.—The bill is of a bright carmine tint, inclining to flesh-colour at the base, the intercrural membrane of the latter colour ; the unguis dusky ; the tarsi and toes livid or bluish flesh-colour, the membranes of a purer tint, the claws dusky, with the ridge and tip yellow. The fore part of the head, cheeks, and throat, is brown, faintly mottled with whitish ; the rest of the head, and the upper neck, all round greenish-black ; all the feathers slightly tipped with brown. A broad band or ring of white succeeds ; then another of light red, minutely dotted with dusky and grey, encircles the fore part of the body. The rest of the lower parts white, excepting a longitudinal medial broad band of dusky spots, tinged with brown, on the breast and abdomen. The middle and hind part of the back white, dotted with grey, as are the inner scapulars and inner webs of some of the outer, which are black. The small wing-coverts are white, most of them tipped with grey ; the secondary coverts grey for half their length. The alular feathers are brownish-black, broadly edged internally with white ; the small coverts beyond them white. The primaries and their coverts greyish-black, at the base greyish-white ; the outer secondaries similar, but glossed with shining green, and tipped with white, as are some of the inner primaries ; three of the inner secondaries have some dull red on their outer webs, and the innermost are light brownish-grey. The tail-feathers are white, and, except the outer two on each side, blackish-grey toward the end, that colour more extended on the middle feathers. The colours are thus nearly similar to those of the adult.

ANAS. DUCK.

Our common Wild Duck, or Mallard, the original of the domestic varieties, may be considered as the type or characteristic representative of this genus, of which the species are not numerous. The body is large, ovato-elliptical, about the same height and breadth; the neck rather long; the head oblong, compressed, of moderate size.

Bill about the length of the head, higher than broad at the base, gradually depressed, becoming a little broader toward the end, and very slightly re-arcuate; upper mandible with the lateral sinuses very broad, the upper semicircular, the frontal angles short and pointed, the dorsal line sloping to beyond the nostrils, then nearly straight, the ridge flattened and gradually narrowed; the unguis obovate, decurved, with the end sharp-edged and rounded, the sides convex, at the base nearly erect, the lamellæ with their outer ends thin and scarcely apparent externally; the nasal sinus moderate, somewhat elliptical, close to the ridge; lower mandible slightly re-arcuate, with the intercrural space very long, narrow, and bare; the crura slender, with their sides convex, gradually sloping more outwards; the unguis obovato-triangular, little convex, broadly rounded.

Mouth rather narrow; anterior palate concave, with a medial ridge, and on each side a series of transverse thin, elevated lamellæ; external lamellæ of the lower mandible slender, but distinct. Tongue fleshy, grooved above, with the sides parallel and furnished with a double series of filaments, the base with numerous conical papillæ, the tip thin and rounded; œsophagus of moderate width, considerably enlarged at the lower part of the neck. Stomach a very large, oblique, transversely elliptical gizzard, with extremely large lateral muscles, strong tendons, dense, rugous epithe-

lium, and nearly smooth roundish grinding plates. Intestine long, of moderate width; cæca long, very narrow at first, then of moderate width.

Trachea of nearly uniform width; the lower larynx with a transversely oblong bony expansion, forming a bulging and rounded sac on the left side. Bronchi of moderate size.

Nostrils elliptical, moderate, sub-basal. Eyes rather small. Legs short; tibia bare for a very short space; tarsus short, compressed, anteriorly with small scutella, and a shorter outer series continuous with those of the outer toe. Hind toe very small, elevated, with a very narrow membrane; fourth toe a little shorter than the third; all scutellate; interdigital membranes full. Claws small, compressed, arched, rather blunt, that of the middle toe internally expanded.

Plumage dense, soft, and elastic; feathers of the head and upper neck short and silky, of the other parts oblong; scapulars large, oblong. Wings of moderate length and breadth, pointed; the second quill longest, the first little shorter; inner secondaries elongated, oblong, broad, rather pointed. Tail short, much rounded, of eighteen acute feathers.

The males differ from the females in being larger and differently coloured. They continue with the females, or only leave them during incubation, to return before the young are fledged. The food consists of seeds and other vegetable substances, worms, insects, reptiles, and small fishes. The nest is placed on the ground, rarely in elevated places or on trees, and the eggs are numerous, white or greenish.

ANAS BOSCHAS. COMMON DUCK.

WILD DUCK. MALLARD.

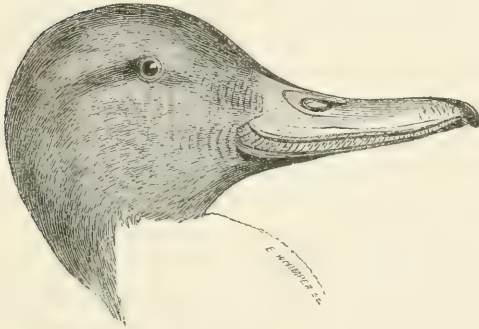


FIG. 61.

Anas Boschas. Linn. Syst. Nat. I. 205.

Anas Boschas. Lath. Ind. Ornith. II. 850.

Canard sauvage. Anas Boschas. Temm. Man. d'Ornith. II. 835.

Wild Duck. Mont. Ornith. Dict. and Suppl.

Common Wild Duck. Anas Boschas. Selby, Illustr. II. 305.

Anas Boschas. Mallard. Jenyns, Brit. Vert. Anim. 233.

Anas Boschas. Bonap. Comp. List, 56.

Male with the bill reddish-yellow, tinged with green; the feet orange; head and upper part of the neck glossy deep green; a narrow white collar; the lower part of the neck and a portion of the breast dark brownish-chestnut; lower parts greyish-white, very minutely undulated with grey; fore part of the back brown; scapulars grey and brown, minutely undulated; hind part of the back black; wings brownish-grey; speculum bluish-green and purple, margined before and behind with black and white; tail-feathers twenty, brownish-grey, broadly edged with white, the four medial recurved, com-

pressed, and black. Female with the bill greenish-grey; the feathers of the upper parts dusky brown, edged with pale reddish; the throat whitish; the lower parts greyish-yellow, streaked and spotted with dusky; the medial tail-feathers straight.

MALE.—Our common Wild Duck, or Mallard, if not one of the most elegantly formed, is certainly one of the most beautifully coloured species of its family. The body is of an oblong form, considerably elongated, somewhat depressed; the neck rather long, narrowed toward the head, which is of moderate size, oblong, and compressed. The bill is about the same length as the head, of greater height than breadth at the base, depressed and a little widened toward the end, which is broadly rounded. The upper mandible has the dorsal line descending and a little concave, the frontal angles small and pointed, the ridge flat at the base, gradually narrowed, the edges marginate, a narrow groove parallel to them near the end, the unguis oblongo-ovate, rather small, decurved at the end, the lamellæ transverse, thin, little prominent, not projecting beyond the margin, and about fifty. The lower mandible is a little re-arcuate, flattened, with the unguis broadly obovato-triangular, the erect, inclinate edges with about sixty external lamellæ.

The nostrils are elliptical, sub-basal, two-twelfths and a half long, near the ridge, in the anterior part of the sub-elliptical nasal membrane. Eyes rather small. Aperture of ear small. The legs are so placed that the body is kept in a nearly horizontal position. The tibia is bare for nearly half an inch; the tarsus short, stout, compressed, reticulate, and having eighteen scutella. The hind toe, extremely small and elevated, so that its claw scarcely reaches the ground, has a slight compressed inferior lobe. The anterior toes are rather long, the inner with eighteen scutella and basal scales, the medial with twenty-eight, the outer with forty oblique scutella; the membranes full. The claws are small, arched, compressed, rather acute, that of the middle toe larger, with the inner edge dilated.

The plumage is dense and elastic, on the head and upper

neck short and splendid. The feathers of the forehead stiffish; of the cheeks and throat short, linear, slightly rounded; of the rest of the neck shortish and very soft; on its lower anterior part large, firm, glossy; on the rest of the lower parts full and blended; on the upper parts firmer. The wings are of moderate length, acute; the primaries narrow and tapering, the second quill longest, the first scarcely a quarter of an inch shorter; the secondaries a little incurvate, obliquely rounded, the inner elongated, very broad, acuminate. The tail is short, much rounded, of sixteen broad, acuminate feathers, and four medial, incumbent, recurvate, reduplicate.

The bill is greenish-yellow, darker toward the end, with the unguis deep brown, the lower mandible reddish-yellow, brown at the end. The iris brown. The feet reddish-orange, the membranes pale reddish-brown, the claws deep reddish-brown. The forehead is blackish-green, the head and upper neck vivid deep green, changing to deep violet. On the middle of the neck is a ring of white, not quite complete behind. The lower neck and a small part of the breast are very deep chestnut or purplish-brown. The anterior part of the back is yellowish-brown tinged with grey; the scapulars grey, very minutely barred with brown; the hind part of the back brownish-black, the rump deep green, as are the four recurved feathers of the tail, the rest being brownish-grey, broadly edged with white. The wing-coverts are brownish-grey, as are the primary quills and coverts. The secondary coverts, excepting the inner, are white in the middle, with a terminal band of velvet black. About ten of the secondary quills have their outer webs brilliant deep green, changing to purplish-blue, with a black bar at the end, succeeded by white. The outer edges of the inner secondaries deep purplish-brown, the rest grey, minutely undulated with darker. The breast, sides, abdomen, and tibial feathers are greyish-white, very minutely undulated with dark grey; the feathers under the tail black, glossed with blue; the axillars and lower wing-coverts white.

Length to end of tail 24 inches; extent of wings 35; wing from flexure 11; tail $4\frac{1}{4}$; bill along the ridge $2\frac{4}{12}$.

along the edge of lower mandible $2\frac{7}{12}$, its height at the base 1, greatest breadth 1; tarsus $1\frac{9}{12}$; first toe $\frac{5}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{4}{12}$; third toe 2; its claw $\frac{6}{12}$; fourth toe $1\frac{1}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female is considerably smaller, and very differently coloured. The bill is greenish-grey, darker toward the base; the plumage of the upper parts dusky brown, the feathers edged with pale reddish-brown; the throat whitish; the lower parts yellowish-grey, faintly streaked and spotted with brown; the speculum as in the male; the middle tail-feathers straight.

Length to end of tail 20 inches; extent of wings 32.

VARIATIONS.—Individuals sometimes, though very rarely, are more or less variegated with white. Sir William Jardine says, “we have seen Drakes having the upper parts of a bluish-grey, the dark breast paler.” Mr. Yarrell mentions “two instances in which females of this species have assumed to a considerable extent the appearance of the plumage of the Mallard, even to the curled feathers of the tail.”

CHANGES OF PLUMAGE.—The females renew their plumage annually in autumn, as do the males. But the latter undergo a singular change in summer, which is thus described by Mr. Waterton:—“About the 24th of May the breast and back of the Drake exhibits the first appearance of a change of colour. In a few days after this the curled feathers above the tail drop out, and grey feathers begin to appear amongst the lovely green plumage which surrounds the eyes. Every succeeding day now brings marks of rapid change. By the 23rd of June scarcely one green feather is to be seen on the head and neck of the bird. By the 6th of July every feather of the former brilliant plumage has disappeared, and the male has received a garb like that of the female, though of a somewhat darker tint. In the early part of August this new plumage begins to drop off gradually, and by the 10th of October the Drake will appear again in all his rich magnificence of dress; than which scarcely anything throughout the whole wide field of

nature can be seen more lovely, or better arranged to charm the eye of man. This description of the change of plumage in the Mallard has been penned down with great care. (It is for all that very imperfect, and wants the accuracy and minuteness necessary for it in a physiological observation). I enclosed two male birds in a coop, from the middle of May to the middle of October, and saw them every day during the whole of their captivity. Perhaps the moulting in other individuals may vary a trifle with regard to time. Thus we may say that once every year for a very short period, the Drake goes, as it were, into an eclipse, so that, from the early part of the month of July, to about the first week in August, neither in the poultry-yards of civilized man, nor through the vast expanse of Nature's wildest range, can there be found a Drake in that plumage which, at all other seasons of the year, is so remarkably splendid and diversified."

HABITS.—The Mallard, which is one of our truly indigenous Ducks, occurs in variable numbers in all parts of the country, being more abundant in marshy and thinly peopled districts, than in such as are dry and well cultivated. It is almost needless to remark that the great improvements in agriculture that have taken place within the last fifty years, and especially the vast extension of draining, have banished it from many tracts, where it was formerly very plentiful. Still it is by no means rare in any large section of the country, and in very many districts quite common. In winter, it for the most part removes from the higher grounds to the hollows and level tracts, and in frosty weather betakes itself to the shores of estuaries and even of the open sea. In the Cromarty and Beaully Firths, great numbers occur along the shores during the winter and spring, and at night especially frequent the muddy parts, where they feed on worms and mollusca. Around Edinburgh are numerous open ditches, and some brooks, to which they resort at night, from October to April, when they may be started in great numbers by a person searching their haunts by moonlight. A friend of mine has often shot them on such occasions, and I have myself seen them thus engaged. It being by touch more than by

sight that the Mallard obtains its food, the night appears to be as favourable for this purpose as the day, and is chiefly used in populous districts, while in the wilder parts it feeds at least as much by day. Marshy places, the margins of lakes, pools, and rivers, as well as brooks, rills, and ditches, are its principal places of resort at all seasons. It walks with ease, even runs with considerable speed, swims, and on occasion dives, although not in search of food. Seeds of gramineæ and other plants, fleshy and fibrous roots, worms, mollusca, insects, small reptiles, and fishes, are the principal objects of its search. In shallow water, it reaches the bottom with its bill, keeping the hind part of the body erect by a continued motion of the feet. On the water it sits rather lightly, with the tail considerably inclined upwards; when searching under the surface it keeps the tail flat on the water; and when puddling at the bottom with its hind part up, it directs the tail backward. The male emits a low and rather soft cry between a croak and a murmur, and the female a louder and clearer jabber. Both on being alarmed, and especially in flying off, quack; but the quack of the female is much louder. When feeding, they are silent; but when satiated they often amuse themselves with various jabberings, swim about, approach each other, move their heads backward and forward, "duck" in the water, throwing it up over their backs, shoot along its surface, half-flying half-running, and, in short, are quite playful when in good humour. On being surprised or alarmed, whether on shore or on the water, they spring up at once with a bound, rise obliquely to a considerable height, and fly off with speed, their hard-quilled wings whistling against the air. When in full flight, their velocity is very great, being probably a hundred miles in the hour. Like other ducks they impel themselves by quickly repeated flaps, without sailings or undulations.

In March they pair, and soon after disperse and select a breeding-place. The nest, bulky, and rudely constructed of flags, sedges, grasses, and other plants, is placed on the ground in the midst of a marsh, or among reeds or rushes, sometimes in a meadow, or even among heath, but always near the water. Instances are recorded of its being built in the fork

of a tree, and a Duck has been known to occupy the deserted nest of a Crow. The eggs, from five to ten, are pale dull-green or greenish-white, two inches and a quarter in length, an inch and nine-twelfths in breadth. When incubation commences, the male takes his leave, though he keeps in the neighbourhood, and joining others, undergoes his annual moult. The female sits very closely, and rather than leave her charge, will often allow a person to approach quite near. One day while searching in the marsh at the head of Duddingston Loch for some plants, I was suddenly arrested, by observing among my feet, some living creature of considerable size. Perceiving it to be a Duck I instantly, perhaps instinctively, pounced upon it. But thinking the eight eggs a sufficient prize, I threw the poor bird into the air, when she flew off in silence. Frequently in leaving the nest she covers it rudely with straws and feathers, probably for the purpose of concealing the eggs. The young are hatched in four weeks, and, being covered with stiffish down, and quite alert, accompany their mother to the water, where they swim and dive as expertly as if they had been born in it. The mother shows the greatest attention to them, protects them from birds, feigns lameness to withdraw intruders from them, and leading them about from place to place, secures for them a proper supply of food. Sometimes the young birds are destroyed by pike, or fall a prey to rapacious birds. They are extremely active, and elude pursuit by diving and remaining under the water, with nothing but the bill above. I once came upon a whole brood of half-grown ducklings in a ditch, when in a moment they all disappeared under the water, and, although I searched everywhere for them, did not succeed in tracing a single individual.

When the young are well grown, and the female replumed, the male commonly joins the flock, and they continue together. Several flocks often unite, but generally these birds are not very gregarious. Being highly and justly esteemed as food, Mallards are shot in great numbers, and are plentiful in our markets. Although they are of a more elegant form, and much more active than the domestic Ducks, the latter often resemble them so closely in colour, as hardly to be distin-

guishable. Once in the Outer Hebrides, when journeying across a moor, I met with a pair in a small lake overhung by a rock, from which I could easily have shot them, had I not supposed them to be tame Ducks that had strayed to a distance from the huts, some of which were about half a mile distant. The young obtained from eggs hatched by domestic fowls generally make their escape. The Mallard has been known to breed with the Muscovy Duck, and several other species. The domestic varieties are numerous, with endless changes of colour. They are generally of larger size, and always of clumsier shape than the wild birds. Frequently the colours are precisely the same, very often pure white. Often the head is surmounted by a large tuft, and one variety has the bill curiously bent downwards.

This species occurs in all the northern and temperate parts of the old continent, and is equally met with in America as far south as the Gulf of Mexico. Although great numbers resort to the Arctic regions to breed, multitudes remain in all the temperate districts. Whether any immigration from the north takes place with us in autumn is not apparent. During winter the species is found in the most northern parts of Scotland, as well as in the most southern of England. "It is common in Ireland, where, although great numbers immigrate every winter, the species breeds throughout the island."

Mr. Burnett, of Kemnay, has favoured me with the following note respecting the Mallard, as observed in his neighbourhood :—"It is very plentiful in all our marshes and wet moors. It is to be seen on the Don, but not often, and only in certain spots, in the winter, particularly in time of hard frost. It feeds at night only, when it dives, but never so by day. In spring its principal food is frogs and their spawn, to obtain which it resorts to the marshes, where these animals most abound, and wherever Wild Ducks are numerous, are to be seen the mangled remains of these reptiles. They are also destructive to corn in the neighbourhood of their haunts, to which in general they are steadily attached. They breed in the month of April, mostly in marshy spots and bushy ponds. I have got a nest in a dry spot among furze, far from any water. The eggs are carefully concealed and covered up

when the bird is off them. The attachment of this species to its young is very great. When a person approaches them, the parents go up to him, put themselves in his way, flutter on the ground before him, and run to induce him to follow. On visiting the pond at the north mill of Kintore last summer, I saw several broods, the parents all acting their parts most admirably to draw me from the spot. The males, however, I have never seen thus employed. I once observed nine very young Ducklings in a moss-pot, and was amused to see how they kept together, always in the middle of the water. Numbers of the young, or flappers, are taken, mostly by dogs, in the end of July and in August. The males do not assume the female plumage until well on in June, and have their own bright dress again by the beginning of November. Wild Ducks occasionally breed with the tame, the crosses showing a disposition to take wing. The young may be brought up, but are not to be trusted unless with tame ones, when they will keep at home. The crossed birds thus produced are said to have a fine flavour, and to be very readily fattened. The first crosses are of a beautiful dove-colour, whatever be that of the domestic parent."

Mr. St. John, in his *Wild Sports of the Highlands*, has a very pleasant chapter on Wild Ducks, in which he says:—"I have frequently caught and brought home young Wild Ducks. If confined in a yard or elsewhere for a week or two with tame birds, they strike up a companionship which keeps them from wandering when set at liberty. Some few years back I brought home three young Wild Ducks: two of them turned out to be Drakes. I sent away my tame Drakes, and in consequence, the next season, had a large family of half-bred and wholly Wild Ducks, as the tame and wild bred together quite freely. The Wild Ducks which have been caught are the tamest of all; throwing off all their natural shyness, they follow their feeder, and will eat corn out of the hand of any person with whom they are acquainted. The half-bred birds are sometimes pinioned, as they are inclined to fly away for the purpose of making their nests at a distance: at other times, they never attempt to leave the field in front of the house. These birds conceal their eggs with

great care, and I have often been amused at the trouble the poor Duck is put to in collecting dead leaves and straw to cover her eggs, when they are laid in a well-kept flower-bed. I often have a handful of straw laid on the grass at a convenient distance from the nest, which the old bird soon carries off, and makes use of. The Drakes, though they take no portion of the nesting labours, appear to keep a careful watch near at hand during the time the Duck is sitting. The half-breeds have a peculiarity in common with the Wild Duck, which is, that they always pair, each Drake taking charge of only one Duck—not, as is the case with the tame Ducks, taking to himself a dozen wives. The young, too, when first hatched, have a great deal of the shyness of Wild Ducks, showing itself in a propensity to run off and hide in any hole or corner that is handy. With regard to the larder, the half-wild Ducks are an improvement on both the tame and wild, being superior to either in delicacy and flavour; their active and neat appearance, too, make them a much more ornamental object (as they walk about in search of worms on the lawn or field) than a waddling, corpulent, barn-yard Duck.”

YOUNG.—The young are at first covered with close, stiffish down, of a greyish-yellow colour, variegated with dusky on the upper parts. The downy covering continues for a month or more, when the first plumage is gradually perfected. The young are exceedingly active, dive expertly, hide themselves when alarmed under banks, in holes, or among reeds or other rank herbage, and seem to feed more on insects, slugs, and other small animals, than on vegetable substances. A curious anecdote of a brood of Wild Ducks, told by his keeper, is thus related by Mr. St. John:—“He found in some very rough marly ground, which was formerly a peat-moss, eight young Ducks nearly full-grown, prisoners, as it were, in one of the old peat-holes. They had evidently tumbled in some time before, and had managed to subsist on the insects, &c., that it contained, or that fell into it. From the manner in which they had undermined the banks of their watery prison, the birds must have been in it for some weeks.

The sides were perpendicular, but there were small resting-places under the bank which prevented them being drowned. The size of the place they were in was about eight feet square, and in this small space they had not only grown up but thrived, being fully as large and heavy as any other young Ducks of the same age." In from eight to ten weeks after they are hatched, the young are able to fly.

PROGRESS TOWARD MATURITY.—The young, when fledged, resemble the female in colouring. I am unable from observation to say when the young male first assumes the full plumage of its sex; but it appears to be at the end of its first autumn.

REMARKS.—Our Domestic Ducks are evidently the offspring of the Wild Mallard, greatly degenerated as to activity and beauty of form, as well as of plumage, but improved, as the agriculturists say of an unwieldy ox incapable of stepping over a gutter, in bulk and susceptibility of fat. Tame Ducks lose their native delicacy of feeling, the sentimentalism of their affections, and instead of pairing for life, or at least for the season, become unprincipled socialists, every Drake taking as many wives as he can get. The Mallard is not singular in being thus vitiated by civilization: all thoroughly domesticated quadrupeds and birds being similarly changed.

ANAS GLOCITANS. BIMACULATED DUCK.

Anas glocitans. Gmel. Syst. Nat. I. 526.

Anas glocitans. Lath. Ind. Orn. II. 862.

Bimaculated Duck. Mont. Orn. Dict.

Canard Glousseur. *Anas glocitans.* Temm. Man. d'Ornith. IV. 533.

Bimaculated Teal. *Querquedula glocitans.* Selb. Illustr. II. 321.

Anas glocitans. Bimaculated Duck. Jen. Brit. Vert., An. 232.

Querquedula glocitans. Bonap. Comp. List, 57.

Male with the bill an inch and ten-twelfths long, eight-twelfths broad toward the end, greenish-yellow at the base, olive-brown toward the end; scapulars and inner secondaries elongated and tapering; tail-feathers acuminate; upper part of the head and hind neck deep chestnut-brown; sides of the head and upper neck glossy green; on the fore part of the cheek an oblong reddish-brown patch, and another on the side of the neck; throat greenish-black; lower fore part of the neck brownish-red spotted with black; lower parts yellowish-white, minutely undulated with black; feathers under the tail black; fore part of back and inner scapulars yellowish-grey, finely undulated with black; outer scapulars black externally, light red on the inner web; wing-coverts brownish-grey, the secondary coverts tipped with reddish-white; primary quills and coverts brownish-grey; speculum deep green, glossed with purple, and margined behind with white; hind part of back and tail-coverts greenish-black; tail-feathers brownish-grey, except the two middle, which are black. Female with the throat yellowish-white, fore neck, part of the breast and sides, light reddish-brown, spotted with dusky brown; breast and abdomen white, the latter with faint brown spots; upper parts deep brown, the feathers edged with yellowish-grey; wing-coverts brownish-grey, the speculum duller than in the male.

MALE.—Not having had an opportunity of examining specimens of this very rare species, which is much smaller

than the preceding, I adopt the description of it given by M. Temminck :—"Upper part of the head deep chestnut ; cheeks and sides of the neck glossy bottle-green ; in the midst of this shining colour are two light red spots, one before and beneath the eye, the other on the side of the neck beneath the ear ; breast (or lower fore neck) bright red, marked with round black spots ; mantle, scapulars, flanks, and thighs marked with black, undulating, close, and very narrow lines, regularly distributed on a pale grey ground ; the longest of the scapulars narrow, acuminate, velvet-black along the shafts and on the outer barbs, and light red on the inner ; wing-coverts brownish-grey ; the mirror of a beautiful bottle-green, defined anteriorly by a light reddish band, behind by a band of white ; rump, upper and lower tail-coverts, and two middle tail-feathers blackish-green, but the rest of the tail-feathers pale brown, margined with white ; a crescentic band of cream-colour separates the blackish-green of the feathers, under the tail, from the whitish tint of the abdomen. Bill olive-brown, yellowish at the base ; feet brown. Length from sixteen to seventeen (French) inches."

FEMALE.—"The female has the head and neck of a brownish-cream colour, marked with very small black spots ; the upper parts of a blackish-brown, each feather bordered with reddish-brown ; lower fore neck of a reddish-brown tint, but all the feathers black in the middle ; smaller wing-coverts brownish-grey ; the speculum green, with purple-gloss at its upper part, black toward the primaries, where these feathers are bordered with white ; primaries and tail brown, the feathers of the latter margined with reddish-white ; lower parts greyish-white ; the feet of an orange tint.

VARIATIONS.—"It appears that the males vary greatly in the tints of their plumage, and in that of the two large spots on the neck, as well as in their outline. I have seen a male only in part covered with the variegated plumage of that sex, while all the rest was as in the female, but patched here and there with some feathers of the male ; the top of the head only having red at the tips of the feathers, and the rest black ; the

metallic green shaded with black, the points of the feathers white. This was probably a young male, or rather a male in the act of moulting."

HABITS.—This species is said to have its principal residence in the northern parts of Asia, being common on the margin of Lake Baikal, the Lena, and the coasts of Corea. It was first described by Pallas in the Stockholm Transactions for 1779. A few individuals have occurred in the north of Europe. In England a male was taken in a decoy, in 1771, and described and figured by Pennant. In 1812, a male and female were captured in the same manner, near Maldon in Essex, and coming into the hands of the late Mr. Vigors, were by him presented to the Zoological Society, in the Museum of which they now are. It does not appear that any other individuals have hitherto been obtained in Britain; but Messrs. Baikie and Heddle state that, as they believe, it has been twice observed in Orkney, on each occasion in the island of Sanday.

QUERQUEDULA. TEAL.

IF we compare together the common Teal, *Anas Crecca* of Linnæus ; the Garganey, *Anas Circia* ; the Gadwall, *Anas strepera* ; and the Pintail, *Anas acuta*, we find that, although there are slight differences in the form of the bill, in the elongation of the lamellæ of the upper mandible, in the length of the neck and tail, they are all so intimately connected that, unless each species be converted into a genus, there can be no reason for separating any two of them for that purpose. *Anas Crecca*, having the neck shorter and the head rather larger, seems to come nearest to the Mallard ; while, as having the neck and tail most elongated, *Anas acuta*, seems most removed from it. *Anas strepera* differs in scarcely any character of importance from the Pintail, for the elongation of the laminæ of its bill is not greater nor more worthy of consideration than that of the laminæ of the Grey Lag Goose, compared with other Geese. Even those who, for this very reason, consider the Gadwall as entitled to generic distinction, make no account of the elongation or abbreviation, protrusion or concealment of the laminæ, in their genus *Anser*, which contains, for example, *Anser palustris* and *Anser leucopsis*, birds which differ from each other more than any two of the four Ducks mentioned above, as entering into the genus *Querquedula*, as here constituted. These birds have the body elongated, elliptical, slightly depressed, and moderately full ; the neck long and slender ; the head oblong, much compressed, moderately arched above.

Bill nearly as long as the head, considerably higher than broad at the base, gradually depressed toward the end, but scarcely widened, it being comparatively slender, with the margins nearly parallel ; upper mandible with the lateral basal sinuses broadly rounded, the dorsal line gently sloping

at first, then nearly straight to the unguis, which is small, obovato-oblong, decurved at the end, the ridge broad and concave at the base, gradually narrowed, convex toward the end, the sides at the base erect, toward the end convex, the edges slightly sinuous, the extremities of the numerous lamellæ rounded or moderately pointed, and projecting a little from the base to two-thirds of the length of the bill, beyond which they are shortened; the nasal sinus small, elliptical, sub-basal, and near the ridge; lower mandible very slightly re-arcuate, with the intercrural space long, narrow, and bare, the crura slender, with their sides convex, gradually sloping more outwards toward the end, the unguis obovato-triangular, considerably convex, the upper lamellæ little elevated and rounded.

Mouth rather narrow; anterior palate concave, with a median prominent line, and on each side a series of very slight oblique lamellæ, besides the lateral series. Tongue fleshy, with a deep median groove, a double lateral series of filaments, its breadth nearly equal throughout, the tip thin and broadly rounded. Œsophagus of moderate width, considerably enlarged before entering the thorax, and again narrowed; proventriculus oblong. Stomach a very large, transversely elliptical gizzard, placed obliquely, with very large muscles, thick rugous epithelium, forming two roundish, flat, or slightly concave plates. Intestine very long, rather wide, enlarging toward the cæca, which are very long and of moderate width; rectum very short.

Trachea a little enlarged in the furcular space, then narrowed; the inferior larynx with an enlargement formed by several of the lower rings united, and on the left side a rounded or ovate bony expansion of rather large size. Bronchi moderate.

Nostrils rather small, oblong, in the fore part of the nasal membrane. Eyes small, as are the ears. Legs very short; tarsus compressed, with small anterior scutella; hind toe very small, with a very narrow membrane; outer toe considerably shorter than the third, which is longer than the tarsus; interdigital membranes emarginate; claws small, slightly arched, compressed, rather acute.

Plumage dense, soft, and blended; feathers of the head and upper neck short, of the other parts moderate, ovate, or oblong; scapulars elongated and acuminate. Wings rather long, narrow, pointed, of twenty-five quills; primaries narrow, the first and second longest; inner secondaries elongated and tapering. Tail small, short or of moderate length, tapering, of sixteen stiffish, tapering feathers.

The males have the scapulars, inner secondaries, and tail-feathers more elongated and acuminate than the females, from which they also differ in having the colours of the plumage more varied. Toward the end of summer the male becomes similar in plumage to the female, but resumes his proper plumage in the beginning of winter. The Teals frequent marshes, lakes, and rivers, and feed on vegetable substances, as well as mollusca, insects, worms, and other small animals.

QUERQUEDULA CRECCA. THE EUROPEAN TEAL.

COMMON TEAL. GREEN-WINGED TEAL.

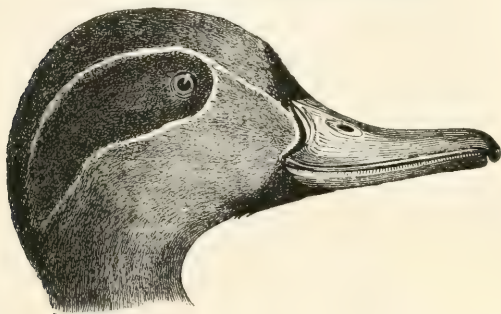


FIG. 62.

- Anas Crecca. Linn. Syst. Nat. I. 204.
 Anas Crecca. Lath. Ind. Ornith. II. 872.
 Common Teal. Mont. Ornith. Dict.
 Anas Crecca. Flem. Brit. Anim. 125.
 Anas Crecca. Temm. Man. d'Orn. II. 846.
 Anas Crecca. Teal. Jenyns, Brit. Vert. Anim. 235.
 Common Teal. Querquedula Crecca. Selby, Illustr. II. 315.
 Querquedula Crecca. Bonap. Comp. List. 57.

Male with the bill an inch and a half long, seven-twelfths broad toward the end, black ; scapulars and inner secondaries elongated and tapering ; tail feathers acuminate ; a longitudinal ridge of narrow decurved feathers on the head and nape ; head and upper-neck chestnut-brown, with a green patch behind the eye, margined beneath with black and white, upper parts and sides finely undulated with dusky and white ; scapulars partly grey, yellowish-white, and black ; speculum black externally, green internally, edged with black ; tips of secondary coverts yellowish-white ; fore-neck and part of breast yellowish-white, with black spots, the rest of the breast white ; abdomen undulated ; under the tail a black and two cream-coloured patches.

MALE IN WINTER.—The Teal, peculiarly so named, is the smallest species of the *Anatinæ* which occur in Britain, where it is indigenous, although the numbers that breed with us are very small compared with those which immigrate from the north in autumn, to depart in spring. It is a remarkably beautiful bird, and in colouring, as well as form, is more nearly allied to the Mallard than any of the other species which I have placed in the same genus. The body is rather elongated, moderately full, a little depressed; the neck of moderate length, and rather slender; the head of moderate size oblong, compressed, and considerably rounded above.

The bill is almost as long as the head, nearly straight, higher than broad at the base, gradually depressed toward the end, with the edges almost parallel, so that the breadth is only about a quarter of a twelfth more toward the end, which is broadly rounded. The upper mandible has the dorsal line at first sloping, then a little concave, afterwards direct, and ultimately decurved, the ridge flattened, gradually narrowed to beyond the nostrils, the sides nearly erect at the base, convex toward the end, the unguis oblong, very small, much decurved at the end, the edges somewhat rearcuate, with about fifty-five lamellæ, of which the outer ends do not project; the lower mandible with the intercrural space very long and narrow, the unguis obovato-triangular, the edges with more than a hundred outer and more numerous inner lamellæ.

The mouth five-twelfths in width. The tongue an inch and a half in length, fleshy, deeply grooved above, with thin lamellate and filamentous margins, the tips horny, thin, and semicircular. The œsophagus seven inches long, about four-twelfths in width, enlarging to seven-twelfths, then narrowed to a quarter of an inch; the proventriculus five-twelfths in breadth. The stomach transversely elliptical, an inch and a twelfth long, an inch and four-twelfths in breadth, with the muscles very thick, the epithelium dense, with concave grinding surfaces. The intestine is three feet ten inches long, its average width nearly two-twelfths; the cœca four inches and a half long, at first only one-twelfth in width, but enlarging to three-twelfths; the rectum two inches and a quarter in length.

The trachea is five inches long, moderately flattened, about two-twelfths in breadth ; the inferior larynx with a transversely elongated tympanum, projecting on the left side in the form of a thin bony rounded prominence, its greatest breadth eight-twelfths, its length three-twelfths. The bronchi moderate, with about thirty half-rings.

Nostrils small, elliptical, a twelfth and a half in length. Eyes small. Legs short ; tibia bare for nearly three-twelfths ; tarsus compressed, with eighteen small anterior scutella. The first toe very small, with ten scutella ; the second scaly on the first phalanx, and with fifteen scutella on the second ; the third with twenty-eight, the fourth with thirty scutella ; the interdigital membranes crenulate, the outer emarginate. The claws are small, arched, compressed, acute ; that of the hind toe more curved.

The plumage is soft, dense, elastic, blended. The feathers on the head and upper neck short and silky, on the hind part of the head and nape linear, and considerably elongated, on the upper parts oblong. The scapulars much elongated, tapering, and pointed. The wing rather long, narrowed, pointed, of twenty-six quills ; the first scarcely shorter than the second, the rest quickly decreasing ; the outer secondaries broad, obliquely rounded ; the inner long, narrow, tapering, a little curved outwards. Tail short, rounded, of sixteen acuminate feathers, of which the medial are eight-twelfths longer than the lateral.

The bill is black. The iris brown. The feet bluish-grey, tinged with brown. The head and upper part of the neck are chestnut-brown. From the eye to the nape is a shining green oblong space, narrowed behind, margined anteriorly and below with a black band and a white line ; a curved band of white ascends from the base of the lower mandible, and passes over the eye ; the feathers margining the base of the bill dusky ; those of the throat brownish-black. On the middle of the hind-neck is a black patch. The upper parts may be described as transversely undulated with brownish-black and white ; the hind part of the back brownish-grey, faintly undulated. The inner webs of the inner scapulars are brownish-grey ; the outer scapulars white, edged with black. The wing-coverts,

inner secondaries, primary quills, and coverts, are brownish-grey; the outer secondary coverts are reddish-white toward the end; the speculum velvet-black externally, edged behind with white, bright green, changing to purple internally, one of the inner scapulars externally edged with black. The upper tail-coverts are black, edged with yellowish-grey; the tail-feathers brownish-grey, edged with paler. A portion of the lower part of the neck is barred anteriorly as well as behind, the rest, with part of the breast, yellowish-white, with roundish black spots; the hind part of the breast white; the sides and abdomen white, undulated with grey. Under the tail are two lateral cream-coloured patches, and a medial black space. The axillar feathers, and some of the lower wing-coverts are white, the rest grey.

Length to end of tail $14\frac{1}{2}$ inches; extent of wings 24; wing from flexure $7\frac{1}{2}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{1}{2}$; along the edge of lower mandible $1\frac{8}{12}$; its height at the base $\frac{8}{12}$; its breadth generally $\frac{1}{2}$; near the end $\frac{6}{12}$; tarsus $1\frac{2}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{1}{12}$; its claw $\frac{2}{12}$; third toe $1\frac{4}{12}$, its claw $\frac{3}{12}$; fourth toe $1\frac{3}{12}$, its claw $\frac{2}{12}$.

FEMALE.—The female has the bill blackish-green; the feet bluish-grey; the head light brown, streaked with dusky; the back dark brown, each feather with two transverse bands of brownish-yellow; the speculum velvet-black externally, bright green internally; neck anteriorly yellowish-brown, with darker transverse shades; the breast white; the rest of the lower parts brownish-white, spotted with brown.

Length to end of tail 13 inches; extent of wings 22; wing from flexure $7\frac{1}{4}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{4}{12}$; tarsus $1\frac{2}{12}$; middle toe $1\frac{4}{12}$, its claw $\frac{3}{12}$.

HABITS.—The Teal frequents marshy places, the margins of lakes and rivers, seldom betaking itself to estuaries, or the open sea-coast, unless in time of frost. It walks with ease, swims with the greatest dexterity, has a very rapid flight, and is in every way remarkably active. Its food consists of seeds of grasses, slender rhizomata, which it pulls up from the mud, insects, mollusca, and worms. It rises from the

water, as well as from the ground, at once, and shoots away with great rapidity, so as to be less easily shot than most other Ducks. In winter it is generally seen in small flocks, which for the most part repose by day, either on the water or its banks, and begin to feed in the evening. At that season its numbers are greatly augmented by individuals from the Continent, and it is generally dispersed, although not at all common in the northern parts of Scotland.

It has been found breeding in various parts of England, though not in considerable numbers. Mr. Selby says:—"Our indigenous broods, I am inclined to think, seldom quit the immediate neighbourhood of the place in which they are bred, as I have repeatedly observed them to haunt the same district from the time of their hatching till they separated and paired, on the approach of the following spring. The Teal breeds in the long rushy herbage about the edges of lakes, or in the boggy parts of the upland moors. Its nest is formed of a large mass of decayed vegetable matter, with a lining of down and feathers, upon which eight or ten eggs rest." The eggs are cream-coloured, an inch and nine-twelfths in length, and an inch and four-twelfths in breadth. Very few Teals are met with in the south of Scotland in summer; but from the Tay northward, some are to be found scattered here and there, generally in sequestered parts of the moorlands, and even in the glens of the central tracts of mountain-land. Two of my pupils found a brood at Loch Callater, in Braemar, in the end of July, 1849. One of them, Mr. James Farquharson, writes:—"As we were returning from a botanical excursion in Glen Callater, and walking along the margin of the marshy ground at the head of the loch, we raised from the heather a female Teal (*Querquedula Crecca*), with a brood of seven or eight young ones. The old one immediately flew to a deep pool close by; there she swam about, apparently in great anxiety, until all her offspring had scrambled through the heather to her; and, though not very expert on land, they proved to be brave swimmers, and quickly sheltered themselves among the long grass growing at the margin of the pool, where we left them unmolested. The gamekeeper in the glen informed us that another pair had bred there that season."

Mr. Burnett of Kemnay, in a series of notes with which he has favoured me, states that "in winter it forms large flocks, the Drakes then having a whistle like that of the Plover. It breeds rather later than the Mallard in our marshes. I found a nest with sucked eggs in a wood. The eggs are not larger than those of a Wood Pigeon, but otherwise resemble those of the Mallard, only they have more of the yellow, and are without spots, although Bewick states the contrary. I have often met with the young. In a small lake not far from Banchory, I saw the parent floating on the water, with her eight young ones swimming in a line behind. The young are considerably darker than those of the Mallard, with less yellow. One caught I describe thus:—Covered with down of a dark olive, approaching to black, each hair tipped with dusky. Under parts dull yellowish, brightest on the sides of the head, which are marked with longitudinal dusky lines. Bill black, tipped a little way up with brownish. Legs and feet black. They squeak like young Ducklings. The attachment of the old birds to their young, if possible even exceeds that of the Mallard. On my picking up two large but unfledged young ones, below Echt, the parent came within a few feet of me, lying down, beating her wings, and uttering her small shrill quack. I never heard the male whistle during the breeding season. The Teals feed much on the farinaceous seeds of a common kind of *carex*."

Mr. St. John, the most interesting and intelligent of our popular writers on natural objects, says:—"The Teal can scarcely be called a winter bird with us, although occasionally a pair or two appear; but in the spring they come in numbers to breed and rear their tiny young in the swamps and lochs. Nothing can exceed the beauty and neatness of this miniature Duck. They fly with great swiftness, rising suddenly into the air when disturbed, and dropping as quickly after a short flight, much in the same manner as a Snipe. In the spring the Drake has a peculiar whistle, at other times their note is a low quack. A pair of Teal, if undisturbed, will return year after year to the same pool for the purpose of breeding. Like the Wild Duck, they sometimes hatch their

young a considerable distance from the water, and lead the young brood immediately to it. I once, when riding in Ross-shire, saw an old Teal with eight newly-hatched young ones cross the road. The youngsters could not climb up the opposite bank, and young and old all squatted flat down to allow me to pass. I got off my horse, and lifted all the little birds up and carried them a little distance down the road to a ditch, for which I concluded they were making, the old bird all the time fluttering about me, and frequently coming within reach of my riding-whip. The part of the road where I first found them passed through thick fir-wood with rank heather, and it was quite a puzzle to me how such small animals, scarcely bigger than a half-grown mouse, could have got along through it. The next day I saw them all enjoying themselves in a small pond at some little distance off, where a brood of Teal appeared every year. In some of the mountain lakes the Teal breed in great numbers. When shooting, in August, I have seen a perfect cloud of these birds occasionally rise from some grassy loch." It also breeds, in small numbers, in the tracts north of the Moray Firth, as well as in Orkney and Shetland. In the Hebrides it is extremely rare, but has been seen in Lewis, and more frequently in Skye. In Orkney it is said by Messrs. Baikie and Heddle to be "by no means numerous, but most abundant during winter. Those which remain during spring and summer build in marshy spots, and near lochs." In Ireland it is reported as being plentiful through the winter, and not wanting at any season. From Lapland, Norway, and Sweden, it extends to the south of Europe, northern Africa, the Caucasus, India, China, and Japan.

QUERQUEDULA CIRCIA. THE GARGANEY TEAL.

GARGANEY. PIED WIGEON. CRICKET TEAL. SUMMER TEAL.

- Anas Circia. Linn. Sys. Nat. I. 204.
 Anas Querquedula. Linn. Syst. Nat. I. 203.
 Anas Circia. Lath. Ind. Ornith. II. 873.
 Anas Querquedula. Lath. Ind. Ornith. II. 872.
 Garganey. Mont. Ornith. Dict. and Suppl.
 Canard Sarcelle d'été. Anas Querquedula. Temm. Man. d'Orn. II. 844.
 Garganey Teal. Querquedula Circia. Selby, Illustr. II. 318.
 Anas Querquedula. Garganey. Jenyns, Brit. Vert. Anim. 234.
 Cyanopterus Circia. Bonap. Comp. List, 57.

Male with the bill an inch and two-thirds long, seven-twelfths and a half broad toward the end, blackish-brown; scapulars and inner secondaries elongated and tapering; tail-feathers acuminate; upper part of the head and a band along the hind-neck umber-brown; a white band over the eye and along the neck; cheeks and upper part of neck chestnut-brown, finely barred with white; throat black; upper parts greyish-brown, glossed with green, the feathers edged with paler; scapulars black, with a medial white streak; wing-coverts pale bluish-grey; speculum green, margined before and behind with white; fore-neck and part of breast pale yellow, with semicircular black bars, the rest of the breast white; abdomen undulated; lower tail-coverts yellowish-white, with black spots. Female with the throat white, fore-neck streaked and spotted with dusky, lower parts white, the sides and abdomen spotted with brown; upper parts deep brown, the feathers edged with white; wing-coverts brownish-grey; speculum duller than in the male. Young similar to the female, but with the colours darker; the speculum greenish-brown.

MALE.—The Garganey, which is somewhat larger than our common Teal, closely resembles it in form, the body being elongated, elliptical, slightly depressed, moderately full; the neck rather long and slender; the head of moderate size, oblong, compressed, and considerably rounded above.

The bill is as long as the head, nearly straight, higher than broad at the base, gradually depressed toward the end, with edges almost parallel, the breadth being only about a twelfth more toward the end, which is broadly rounded. The upper mandible has the dorsal line at first sloping, then a little concave, afterwards direct, at the end decurved, the ridge concave, gradually narrowed beyond the nostrils, the sides nearly erect at the base, convex toward the end, the unguis obovato-oblong, small, much decurved at the end, the lamellæ, of which there are about fifty, slightly projecting to beyond the middle of the bill; the lower mandible with the intercrural space very long and narrow, the unguis obovato-triangular, the edges with very numerous lamellæ.

Nostrils very small, elliptical, one-twelfth in length. Eyes small. Legs short; tibia bare for three-twelfths; tarsus compressed, with small anterior scutella. The hind toe very small, with a very narrow membrane; the third toe longer than the tarsus; the interdigital membranes crenulate, the outer emarginate, with an abrupt acute notch. The claws small, arched, compressed, acute.

The plumage soft, dense, elastic. The feathers on the head and upper neck short, stiffish, and rather blended; on the body ovate. The scapulars much elongated, tapering, and pointed. The wing rather long, narrow, pointed, of twenty-six quills, the first slightly longer than the second, the rest quickly decreasing; the outer secondaries broad, obliquely rounded; the inner long, narrow, tapering, a little curved outwards. Tail short, rounded, of sixteen acuminate feathers.

The bill is greyish-black; the iris brown; the feet greyish-brown; the upper part of the head and the hind part of the neck, to half way down, umber-brown; from over the fore part of the eye, a narrow white band extends more than half way down the neck; the sides of the head and upper

neck dark-brown, with small white lines. The back dark-brown, the feathers edged with light-brown; scapulars black, with a medial white stripe; wing-coverts light bluish-grey; primaries brownish-black; speculum dark bluish-green, margined externally and internally with white; inner secondaries dusky, edged with white. The lower neck and part of the breast dark-brown, with paler crescentic markings; the lower parts white, but the sides undulated with black lines, and having two broad bands behind; the lower tail-coverts mottled, the feathers being black, with white margins.

Length to end of tail 16 inches; extent of wings 26; wing from flexure $7\frac{1}{2}$; tail $3\frac{1}{2}$; bill along the ridge $1\frac{8}{12}$, along the edge of lower mandible $1\frac{9}{12}$, its breadth near the end $\frac{7}{12}$; tarsus $1\frac{2}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{2}{12}$; third toe $1\frac{5}{12}$, its claw $\frac{5}{12}$.

FEMALE.—The female is considerably smaller. The head brown, spotted with dusky; a brownish-white band, with dusky streaks, over the eye. The feathers of the upper parts dark-brown, mostly tinged with green, and having reddish-brown edges and whitish tips; the wing-coverts brown; the speculum as in the male, but of a dull brownish-green. The throat white; the fore neck and breast greyish-white, variegated with brown; the feathers on the sides of the body brown, with white margins; the rest of the lower parts white, only the abdominal and subcaudal feathers spotted with brown.

Length to end of tail 15 inches; extent of wings 25; tarsus $1\frac{3}{12}$; middle toe and claw $1\frac{8}{12}$.

HABITS.—The Garganey Teal has a very extensive range of habitation, it having been found in India, Africa, the south of Europe, and from thence as far north as Russia and Sweden. It is more a southern bird, however, than our other species, and in Europe is met with chiefly in summer. In England it has been obtained in Cornwall, Devonshire, Kent, Essex, Norfolk, Lincolnshire, and Yorkshire. It is also mentioned as occurring in Wales. It had not, I believe, been observed in Scotland until March 1841, when four

individuals, said to have been shot near Stirling, were exposed for sale in the Edinburgh market. Mr. Yarrell also states, that Dr. Edward Clarke sent him notice from Edinburgh that six specimens were shot in Stirlingshire in the last fortnight of March 1841. It is said, also, to have been seen in small numbers in the Montrose Basin. It is also stated to occur, though rarely, in Orkney, appearing chiefly, if not altogether, in spring. It is said to inhabit marshy places, rivers, and lakes, and to feed on slugs, insects, worms, aquatic plants, and their seeds: to nestle in wet meadows, and to lay ten or twelve greenish-yellow eggs. Mr. Thompson marks it as "of very rare occurrence in Ireland."

REMARKS.—I have not examined the trachea of this species; but, according to M. Temminck, "it is rather wide at the upper larynx, suddenly becomes very narrow, then gradually acquiring a greater diameter, until toward the lower larynx, it is there composed of rings twice the breadth of those of the middle of the tube; the lower larynx forms a large bony protuberance, which dilates beneath." Mr. Yarrell figures the bony enlargement, and describes it as "nearly oval, and placed perpendicularly, so as to appear like a continuation of the tracheal tube, rather than as an appendage to it; the enlargement is not on the left side, as in other species, but in the front, and the bronchial tubes come off from the flattened inner surface which lies upon the œsophagus."

The above descriptions are taken from prepared specimens from India.

QUERQUEDULA STREPERA. THE GADWALL TEAL.

GADWALL. GREY.

Anas Strepera. Linn. Syst. Nat. I. 200.

Anas Strepera. Lath. Ind. Ornith. II. 859.

Gadwall. Mont. Ornith. Dict.

Canard Chipecau ou Rideune. Anas Strepera. Temm. Man. d'Orn. II. 837.

Common Gadwall. Chauliodus Strepera. Selb. Illustr. II. 301.

Anas Strepera. Gadwall. Jen. Brit. Vert. Anim. 231.

Chaulelasmus Strepera. Bonap. Comp. List, 56.

Male with the bill an inch and ten-twelfths long, eight-twelfths broad toward the end, black; scapulars and inner secondaries elongated and acuminate; middle tail-feathers pointed, but not much longer than the rest; upper part of the head and nape dusky, with small reddish-brown markings; lower neck all round, and part of the back, dusky, with semi-circular white lines; middle of the back, scapulars, and sides, finely undulated with dusky-grey and reddish-white; smaller wing-coverts grey, barred with pale reddish; middle coverts deep chestnut-red; speculum black and white; hind part of back and tail-coverts bluish-black; tail grey. Female with the scapulars, inner secondaries, and tail-coverts less elongated; the upper part of the head dusky, a lightish streak over the eye; the upper parts blackish-brown, the feathers edged with reddish; the lower parts light reddish, marked with oblong spots of greyish-brown.

MALE IN WINTER.—The “Gadwall” so closely resembles the “Pintail” in size, proportions, and plumage, that, I think, there can be little doubt as to its generic identity, although it differs in having the laminae of the upper mandible considerably projecting, and the middle tail-feathers

less elongated. Its body is elongated, moderately full, a little depressed; the neck rather long; the head of moderate size, oblong, compressed, and considerably rounded above.

The bill is somewhat shorter than the head, nearly straight, rather narrow, higher than broad at the base, gradually depressed toward the end, with the edges almost parallel, so that the breadth is scarcely half a twelfth more toward the end; the upper mandible with the lateral sinuses broadly rounded, the upper rather pointed, the angles short and obtuse, the dorsal line declinate to beyond the nostrils, then nearly straight to the unguis, which is small, obovato-oblong, and decurved at the end, the ridge of moderate breadth, and rather concave at the base, gradually narrowed, becoming convex, the sides nearly erect at the base, convex toward the end, the edges slightly sinuous, with about fifty lamellæ, of which the rather broad and rounded outer extremities project considerably; the nasal sinus small, ovato-elliptical, sub-basal, close to the ridge; lower mandible very slightly recurvate, with the intercrural space very long, narrow, and bare, the crura slender, gradually flattened, with about sixty outer lamellæ on the erect edges, the unguis small, obovato-triangular, considerably convex.

Mouth of moderate width; anterior palate deeply concave, with a median prominent ridge, which is papillate behind. The tongue, an inch and ten-twelfths long, is fleshy, with a deep longitudinal groove, two lateral series of filaments, and a thin broadly rounded tip. The œsophagus, ten inches and a half in length, is of moderate width, enlarges to ten-twelfths at the lower part of the neck, and again contracts; the pro-ventriculus oblong, its greatest breadth eight-twelfths. The stomach is very large, elliptical, compressed, an inch and nine-twelfths long, two inches in breadth; the muscles extremely large, the right ten, the left nine-twelfths thick; the epithelium thick, rugous, with two roundish, slightly concave, grinding plates. The intestine is very long, and rather wide, its length being six feet ten inches, its width for two feet four-twelfths and a half, then gradually enlarging to half an inch; the rectum five inches and a quarter in length; the cœca eleven inches long, two twelfths wide for two

inches, then enlarging to six-twelfths, toward the end narrowed to two-and-a-half-twelfths, with the tip rounded.

The trachea, seven inches and a half in length, at first from four to three-and-a-half-twelfths in breadth, enlarges to five-twelfths, then contracts to three-and-a-half-twelfths; the lower larynx with an enlargement formed by the union of several of the rings, and on the left side a rounded bony tympanum, the greatest transverse diameter of the whole being an inch and a twelfth. The bronchi of moderate size.

Nostrils small, elliptical, two-twelfths long. Eyes small. Legs very short; tibia bare for four-twelfths; tarsus compressed, with twenty small anterior scutella, and about twelve outer, the rest reticulated with small angular scales. The first toe very small; the second much shorter than the fourth, which is a little exceeded by the third; the first with ten scutella, the second scaly on the first phalanx, and with fifteen scutella on the second, the third with thirty scutella, the fourth thirty-six; the interdigital membranes crenulodenticulate, the outer emarginate. The claws are small, arched, compressed, rather obtuse, that of the middle toe little dilated internally.

The plumage is soft, close, and blended. The feathers on the head short, on the occiput and nape somewhat elongated, on the other parts moderate, ovate, or oblong. The scapulars are much elongated, tapering, and pointed. The wing is rather long, narrow, and pointed, with twenty-five quills; the primaries little curved, tapering; the first a twelfth shorter than the second, the rest rapidly decreasing; the outer secondaries broad, incurved, and obliquely rounded, the inner elongated and tapering. The tail small, short, rounded, of sixteen stiffish, pointed feathers, of which the medial project a quarter of an inch beyond the next.

The bill is black, shaded with blue toward the base. The eyes reddish-brown. The feet dull orange; the webs darker; the claws dusky. The upper part of the head and a band down the nape, are dusky, variegated with reddish-brown, the tips of the feathers being of the latter colour. Behind the eye are two faint dull-grey streaks, separated by one dotted with reddish. The forehead and cheeks greyish-white, dotted

with dusky, the throat, sides and fore part of the neck yellowish-red, similarly dotted, but the markings on the throat almost obliterated. The lower part of the neck all round dusky, undulated with semicircular white bands; the fore part of the back similar, with the white bands gradually narrowed; the middle part of the back and the scapulars dusky, finely undulated with dull white; some of the posterior scapulars grey, and a few margined with reddish; the rest of the back black, at first brownish, then gradually tinged with blue; the tail-feathers grey, most of them narrowly edged with white, and the outer three dusky toward the end. The smaller wing-coverts are dull grey, widely undulated with reddish-white; some of the middle coverts deep chestnut-red; the primary coverts and quills brownish-grey, with the inner webs paler; the seven outer secondary quills grey, tinged with red at the end, several of the next deep black, the inner deep grey. Two outer secondaries grey, six next gradually changing to deep black, with the terminal margins white, three next white, five inner grey. The wing spot is thus black externally, white internally. The lower parts are greyish-white, the middle of the breast pure white; the flanks undulated with dusky grey; the abdomen more obscurely undulated; the feathers below the tail, like those above, deep bluish-black. The axillars and lower wing-coverts white.

Length to end of tail 21 inches; extent of wings 34; wing from flexure $10\frac{1}{2}$; tail $4\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$; its height at the base $\frac{9}{12}$; its breadth toward the end $\frac{8}{12}$; tarsus $1\frac{1}{2}$; hind toe $\frac{5}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{4}{12}$; third toe $1\frac{1}{2}$, its claw $\frac{5}{12}$; fourth toe $1\frac{1}{2}$, its claw $\frac{3}{12}$.

FEMALE.—The female, which is considerably smaller, has the upper mandible dusky, on the sides dull orange, the lower mandible chiefly of the latter colour; the iris brown; the feet of a paler dull orange. The upper part of the head dusky, variegated with light reddish-brown; a pale streak, dotted with dusky, over the eye; the sides of the head and upper neck all round light yellowish-red, with small dusky streaks, the throat greyish-white. On the rest of the neck, and all the upper parts, the feathers are brownish-black,

broadly edged with light red. The wing-coverts brownish-grey, edged with paler; the wing as in the male, but with the speculum paler. The tail-feathers are dusky, obliquely barred with pale white, and narrowly edged with reddish-white. The lower parts are light reddish, with dusky white.

The scapulars and inner secondaries are less elongated than in the male, as are the middle tail-feathers.

Length to end of tail 19 inches; extent of wings 30; wing from flexure $9\frac{1}{2}$; tail $3\frac{3}{4}$; bill along the ridge $1\frac{8}{12}$; tarsus $1\frac{4}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{5}{12}$.

VARIATIONS.—Great differences as to size occur, as in the Pintail.

HABITS.—The Gadwall can scarcely be considered as a regular winter visitant, it being very seldom met with near the eastern coast of England, and that chiefly in spring; nor has it hitherto occurred in Scotland, except in the Montrose Basin, the neighbourhood of Peterhead, and the islands of Sanday and Orkney. Several specimens have been obtained in Ireland. It is said by authors to be plentiful in the marshes in the northern parts of Europe. M. Temminck says it is “very abundant in Holland, where it lives in the same places as the common Wild Duck.” In winter it advances southward, dispersing along the coasts.

It is equally a native of North America, occurring, according to M. Audubon, both along the coasts and in the interior. According to that enthusiastic naturalist, it “dives well on occasion, especially on being wounded. At the appearance of danger, it rises on wing, whether from the ground or from the water, at a single spring, in the manner of the Mallard, and, like it also, ascends almost perpendicularly for several yards, after which it moves off in a direct course with great celerity. I have never seen it dive on seeing the flash of a gun; but when approached it always swims to the opposite part of the pond, and, when the danger increases, flies off. On being wounded, it sometimes by diving makes its escape among the grass, where it squats and remains concealed. It walks with ease, and prettily, often making incursions upon the land,

when the ponds are not surrounded by trees, for the purpose of searching for food. It nibbles the tender shoots and blades of grasses with apparent pleasure, and will feed on beech nuts, acorns, and seeds of all kinds of gramineæ, as well as on tadpoles, small fishes, and leeches. After rain it alights in the corn-fields, like the Mallard, and picks up the scattered grains of maize. The common notes or cry of the female have a considerable resemblance to those of the female Mallard; but the cry of the male is weaker, as in that species."

QUERQUEDULA ACUTA. PINTAIL TEAL.

PINTAIL DUCK. WINTER DUCK.

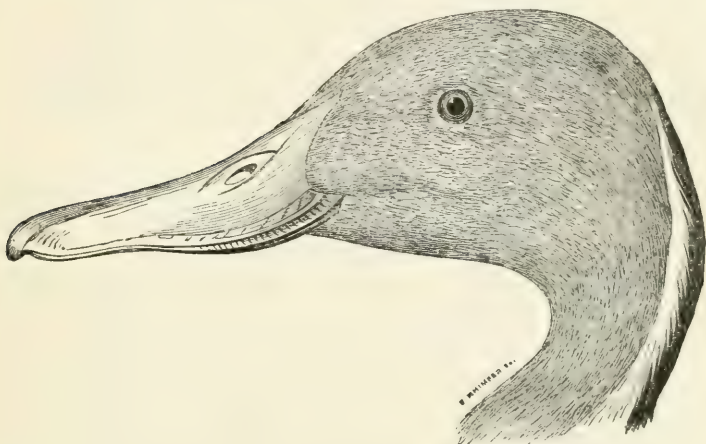


FIG. 63.

Anas acuta. Linn. Syst. Nat. I. 202.

Anas acuta. Lath. Ind. Orn. II. 864.

Pintail Duck. Mont. Orn. Dict. and Suppl.

Canard à longue queue ou Pilet. *Anas acuta.* Temm. Man. d'Orn. II. 839.

Common Pintail. *Querquedula acuta.* Selb. Ilust. II. 311.

Anas acuta. Pintail. Jen. Brit. Vert. Anim. 232.

Dafila acuta. Bonap. Comp. List, 56.

Male with the bill two inches and two-twelfths long, nine-twelfths broad toward the end, black, with the sides toward the base light blue; scapulars and inner secondaries elongated and acuminate; middle tail-feathers long, and tapering to a fine point; head and throat dusky brown; a longitudinal band of greenish-black on the hind neck, and two white bands continuous with the white of the lower parts; back and sides finely undulated with grey and white; smaller wing-coverts grey;

speculum green and black, margined anteriorly with red and posteriorly with white; tail grey; middle feathers brownish-black; lower tail-coverts black, the outer partially white. Female with the scapulars, inner secondaries, and tail-feathers less elongated; the head and neck light reddish, streaked with dusky; the upper parts blackish-brown, the feathers edged and variously barred with reddish-white; the lower parts yellowish-white, marked with oblong spots of greyish-brown.

MALE IN WINTER.—The elongated neck, pointed tail, and variegated plumage of this species, render it one of the most elegant of the family to which it belongs. Its head is of moderate size, oblong, compressed, and considerably rounded above.

The bill is scarcely shorter than the head, nearly straight, rather narrow, higher than broad at the base, gradually depressed toward the end, and slightly widened; the upper mandible with the lateral sinuses broadly rounded, the upper convex, the angles short and rather obtuse, the dorsal line declinate to beyond the nostrils, then nearly straight to the unguis, which is small, ovato-triangular, and decurved at the end, the ridge of moderate breadth, rather concave, and gradually narrowed, becoming convex, the sides nearly erect at the base, convex toward the end, the edges slightly sinuous, with about fifty lamellæ, of which the narrowly-rounded outer extremities are scarcely apparent; the nasal sinus small, elliptical, sub-basal, close to the ridge; lower mandible slightly rearcuate, with the intercrural space very long, narrow, and bare, the crura slender, gradually flattened, the unguis small, elongated-triangular, slightly convex.

Nostrils small, elliptical, two-twelfths long. Eyes small. Legs very short; tarsus compressed, with fifteen anterior small scutella, and ten outer, the rest reticulated with small angular scales. The first toe very small; the second much shorter than the fourth, which is considerably exceeded by the third, the latter with thirty-two scutella; the interdigital membranes nearly even, and crenato-denticulate. The claws are small, little arched, compressed, rather obtuse, that of the third toe with the inner edge a little expanded.

The plumage is close, soft, and blended. The feathers on the head and upper neck short, somewhat velvety; on the occiput and scape a little elongated; on the other parts moderate, ovate or oblong. The scapulars are much elongated, tapering, and pointed. The wing is rather long, narrow, and pointed, with twenty-five quills; the primaries little curved, tapering; the first two-twelfths longer than the second, the rest rapidly decreasing; the outer secondaries broad, incurved, and obliquely rounded, the inner elongated and tapering. The tail, although small, is rather long, on account of the extent of the two middle tapering and pointed feathers, which exceed the next by an inch and a quarter, and then the next by ten-twelfths, while the lateral feathers are two inches and a half shorter than the longest. The tail is thus cuneato-acuminate, and consists of sixteen feathers.

The bill is black, but with the sides pale blue under the nostrils. The eyes reddish-orange. The feet greyish-black. The head and upper part of the neck, laterally and anteriorly, are dusky-brown, the upper part of the head lighter, and the feathers behind the eyes glossed with purplish-red and pale green. From the nape for three inches down the middle of the neck, a band of brownish-black, tinged with green, and on each side of it a line of white, continuous with that of the fore part and sides of the neck and breast. The lower hind part and sides of the neck delicately undulated transversely with grey and white lines, as are the sides of the body; the hind part of the back brownish-grey, with faint undulations; most of the tail-coverts greenish-black on the outer, and white on the inner webs. The tail-feathers grey, narrowly edged with greyish-white, the tint becoming deeper toward the two middle, which are brownish-black. The elongated scapulars are velvet-black, edged toward the end with yellowish white. The smaller wing-coverts are light bluish-grey, the outer secondary coverts tipped with light red. The primary quills and coverts light greyish-brown, with white shafts; the outer secondaries black, tipped with white, and eight of them bronzed green on the outer web; the inner are black in the middle, and edged with grey or brown. The

axillars white, with grey markings; the lower wing-coverts grey. On the sides of the rump is a buff-coloured patch; the abdomen white, faintly undulated with grey; the feathers under the tail black, the outer externally white; the immediate coverts long, stiff, and pointed.

Length to end of tail 25 inches; extent of wings 35; wing from flexure $11\frac{1}{2}$; tail $6\frac{1}{2}$; bill along the ridge $2\frac{2}{12}$, along the edge of lower mandible $2\frac{3}{12}$, its height at the base $\frac{11}{12}$, its breadth toward the end $\frac{9}{12}$; tarsus $1\frac{1}{2}$; hind toe $\frac{5}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{1}{2}$, its claw $\frac{4}{12}$; third toe $1\frac{1}{2}$, its claw $\frac{5}{12}$; fourth toe $1\frac{1}{2}$, its claw $\frac{3}{12}$.

FEMALE.—The female, which is much smaller than the male, is very differently coloured. The bill is greyish-black above, reddish-brown beneath; the feet brown. The head and neck are light reddish-brown, streaked with dusky, the lines very delicate on part of the middle of the neck behind. The upper parts are blackish-brown, the feathers narrowly edged and variously barred with reddish-white. The quills greyish-brown; the speculum faint, but glossed with green and tinged with reddish; the secondaries terminally edged with white, and their coverts with reddish-white. The tail-feathers marked like the back. The lower parts are reddish-white, marked with oblong dusky spots; the longer feathers of the sides obliquely, the axillars transversely barred. The scapulars and inner secondaries are less elongated; and the tail is much shorter, the middle feathers projecting little beyond the rest.

Length to end of tail 21 inches; extent of wings 33; wing from flexure $9\frac{1}{4}$; tail $3\frac{3}{4}$; bill along the ridge $1\frac{11}{12}$; tarsus $1\frac{4}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

HABITS.—This elegantly formed and beautifully coloured species is not uncommon in winter and spring in some parts of England, but is of rare occurrence even in the south of Scotland, and very uncommon north of the Tay. It is said, however, to be “pretty abundant in many parts of Orkney, but especially in Sanday, migrating northward commonly in March.” In Ireland it is “a regular winter visitant,

in small numbers, to the coast and inland waters." It is extensively dispersed over the continent of Europe, and not less so over that of North America. Mr. Audubon, who has studied its habits, informs us that on the water few birds exhibit more graceful motions. "They swim rather deeply, keep close together, and raise the hind part of the body. On the land they walk with ease, still carrying their tail raised. Their flight is very rapid, greatly protracted, and almost noiseless. They are scarcely nocturnal, but rest much in the middle of the day, basking in the sunshine whilst on the water, whenever they can indulge in this luxury. In feeding they often associate with the Mallard, Wigeon, and Blue-winged Teal. Their food consists of vegetable substances, seeds, and fruits, but also of tadpoles, leeches, insects, and other small animals. On ponds they feed along the most shallow places, or by the edges, immersing their heads and necks, and groping with their hind parts elevated, like the Mallard; but never diving for the purpose, although when wounded they can pass under the surface for a short space."

According to Montagu, "the notes of the Pintail are extremely soft and inward; the courting note is always attended with a jerk of the head; the other greatly resembles that of a very young kitten. In the spring, the male indicates his softer passions by suddenly raising his body upright in the water, and bringing his bill close to his breast, uttering at the same time a soft note. This gesticulation is frequently followed by a singular jerk of the hinder part of the body, which in turn is thrown up above the water."

CHANGES OF PLUMAGE.—The moult is generally completed by the end of autumn, from which time until the middle of summer the males undergo no other change than what results from the action of the weather. They then, however, as Montagu states, "assume a very near resemblance to the female, which at other times is known to be so extremely dissimilar. In the month of June, or beginning of July, these birds commenced their change of plumage, and by degrees, after making a singular mottled appearance,

especially on the part of the body which was white before, became by the first week in August entirely of a brown colour. The beautiful bronze on the head, the white streak on each side of the neck, and all the white beneath, as well as the elegant scapulars, had all entirely vanished, and to all appearance a sexual metamorphosis had taken place. But this change was of short duration, for about the latter end of September one of the males began to reassume the masculine attire ; the white on the under parts of the body, streaks on the neck and scapulars, and some bronze on the head, were evident, and by the middle of October this bird was again in full plumage. The other had then only begun to change, and did not become perfect till the middle of November.

“ The following is the description of a Pintail after he had thrown off the masculine plumage, taken on the 19th of August :—Bill as usual. Top of the head, and from thence down the back of the neck, dusky and pale ferruginous, intermixed in minute streaks, paler on the forehead ; sides of the head and throat brown, with minute dusky specks tinged with ferruginous ; the front and sides of the neck brown, with dusky black spots, which are minute on the upper parts, becoming larger by degrees downwards, where they are also more distinct ; the breast and belly very pale brown, with more distant dusky spots ; the back and scapulars dusky black, with pale margins, each feather having a transverse bar of white near the tip ; the longer scapulars are only margined with rufous white, and some are powdered with white ; the rump like the back, but these feathers gradually lose the white bar as they approach the tail, so that the tail-coverts are only margined with white ; the feathers on the sides of the body being large, have broad margins, with the middle dusky black, in which is either a ferruginous white bar or two spots, one on each side of the shaft ; the prime quills dusky grey as usual ; the speculum changeable green or copper, tipped with white, a violet bar dividing the green from the white ; the first tertial is brown on the inner web, grey on the outer near the shaft, and a broad margin of violet ; the rest of the tertials are brown dashed with cine-

reous, black near the shafts ; the coverts of the wings plain dark cinereous, the largest series tipped with bay ; the tail consists of sixteen dusky feathers dashed with cinereous, gradually becoming darker towards the middle feathers, which rather exceed the next in length, making the tail regularly cuneiform ; vent and under tail-coverts rufous white, with distant black spots.

“ This double moulting in so short a time, peculiar to some species of birds, is a most curious and extraordinary circumstance, that seems to bid defiance to all human reasoning.”

RHYNCHASPIS. SHOVEL-BILL.

IN this genus, which differs little from *Querquedula*, unless in the expanded form of the bill, and the remarkable elongation of the extremely attenuated lamellæ, the body is elongated, elliptical, slightly depressed, and moderately full ; the neck rather long and slender ; the head oblong, much compressed, little elevated above.

Bill longer than the head, much higher than broad at the base, gradually depressed and widened toward the end, the breadth of which is double that of the base ; upper mandible with the basal sinuses broadly rounded, the dorsal line gently sloping and nearly straight to the unguis, which is small, oblongo-obovate, decurved at the end, the ridge broad and concave at the base, gradually narrowed, convex toward the end, the sides at the base erect, toward the end spreading and convex, the edges sinuate, the very numerous, elongated, slender lamellæ projecting conspicuously from the base to near the broadest part, beyond which they are incurved, the nasal sinus small, ovato-elliptical, sub-basal, and near the ridge ; lower mandible less dilated, with the intercrural space very long, rather narrow, and bare, the crura erect at the base, horizontal toward the end, with their former outline considerably rearcuate, the lamellæ extremely numerous, the upper filiform, the unguis small, obovate, and little convex.

Mouth of moderate width ; anterior palate broadly concave, with a median prominent line, having a few papillæ toward the base. Tongue fleshy, with a deep median groove, and marginal slender lamellæ and bristles, its breadth increasing to the end, where it is abrupt, but with a semicircular median flattened tip. Œsophagus of moderate width ; proventriculus oblong. Stomach a very muscular, roundish gizzard, placed obliquely, with longitudinal rugous epithelium,

and thick grinding plates. Intestine extremely long and slender; cœca long, rather narrow; rectum very short.

Trachea slowly enlarging from the top; the inferior larynx with a rounded bony expansion, comparatively small on the left side. Bronchi large, with numerous rings.

Nostrils rather small, elliptical, in the fore part of the nasal membrane; eyes small; ears very small. Legs very short; tarsus compressed, with small anterior scutella; hind toe very small, with a very narrow membrane; outer toe a little shorter than the third, which is longer than the tarsus; interdigital membranes emarginate; claws slender, compressed, acuminate, moderately arcuate.

Plumage dense, soft, and glossy; feathers of the head and upper neck short and blended; of the other parts moderate, ovate, or oblong; scapulars elongated and acuminate. Wings of moderate length, narrow, pointed, of twenty-five quills; primaries narrow, the first and second longest; inner secondaries elongated and tapering. Tail small, much rounded, of fourteen stiffish, tapering feathers.

In this genus, of which very few species are known, the lamellæ of the mandibles receive their highest degree of development as to elongation, but are much inferior to those of several other genera in actual size and strength. They appear to be thus modified to be adapted to the separating from the mud of insects, mollusca, worms, and the like, on which, more than on vegetable substances, the Shovel-Bills feed. Some writers have assumed this form of bill as typical, and give the generic name *Anas* to the group; but I think the truly typical bill of a Duck, or that which combines all the essential qualities of a bill answering the ordinary purposes to which Ducks apply that organ, is to be seen in our common Mallard, to which and its brethren, therefore, I would prefer giving the ancient generic name.

The male has the scapulars, inner secondaries, and tail-feathers, more elongated and acuminate than the female, which it also greatly excels in the beauty of its plumage. Toward the end of summer the male becomes similar in plumage to the female, but resumes his gaudy livery in the beginning of winter.

RHYNCHASPIS CLYPEATA. THE BLUE-WINGED SHOVEL-BILL.

SHOVELLER. BLUE-WINGED SHOVELLER. BROAD-BILL. RED-BREASTED SHOVELLER.

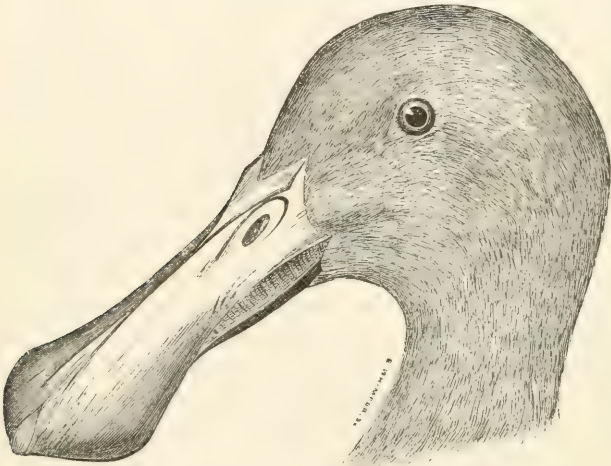


FIG. 64.

Anas clypeata. Linn. Syst. Nat. I. 200.
Anas clypeata. Lath. Ind. Ornith. II. 856.
 Shoveller. Mont. Ornith. Dict. and Suppl.
 Canard Souchet. *Anas clypeata.* Temm. Man. d'Ornith. II. 842.
 Common Shoveller. *Spathulea clypeata.* Selby, Illustr. II. 297.
Anas clypeata. Common Shoveller. Jenyns, Brit. Vert. Anim. 230.
Rhynchaspis clypeata. Bonap. Comp. List, 57.

Male with the bill greyish-black, two inches and a half long, an inch and a quarter in breadth near the end; feet orange-red; head and upper neck glossed with green and purple; lower neck white; breast purplish-chestnut; back greenish-black; smaller wing-coverts light blue; scapulars

white, greenish-black, and pale blue; speculum bright green, margined anteriorly with white; tail short, much rounded, of fourteen pointed feathers. Female with the bill dusky above, reddish-brown beneath, the head and upper neck pale reddish, streaked with dusky, the lower neck and breast similar, with dusky spots; feathers of the upper parts blackish-brown, edged with reddish-white; smaller wing-coverts faintly tinged with light blue; speculum duller, and of less extent than in the male.

MALE IN WINTER.—The peculiar form of the bill, from which this species derives its name, at once distinguishes it from every other British bird. Its body is rather full and somewhat depressed; the neck of moderate length; the head oblong, nearly flat above, and much compressed.

The bill is longer than the head, of much greater height than breadth at the base, gradually depressed, and widened toward the end, its breadth there being doubled; upper mandible with the basal margins broadly rounded, the dorsal line gently sloping and nearly straight to the unguis, which is small, oblongo-obovate, decurved at the end, the ridge broad and concave at the base, gradually narrowed, the sides at first erect, gradually more declinate toward the end, and convex; the end semicircular; the edges marginate, sinuous, with about a hundred and seventy lamellæ, of which the outer ends are compressed, tapering, and pointed, and project so as to resemble a comb, until the commencement of the broadest part of the bill, where they are more widely set and short, and from thence to the tip, where, although elongated and acicular, they curve inwards; the nasal groove ovato-elliptical, rather small, sub-basal, and near the ridge; the lower mandible slightly re-arcuate, with the intercrural space very long and rather narrow, the sides of the crura erect at the base, horizontal at the end; the unguis small, obovate, little convex, the edges inclinate, with about eighty external and two hundred and twenty upper lamellæ, the latter acicular.

The mouth is of moderate width; the anterior palate broadly concave, with a median prominent ridge, becoming

papillate toward the base. The tongue, two inches and three fourths in length, is emarginate and finely papillate at the base, fleshy, with a deep longitudinal groove, at first compressed and narrow, then gradually expanded, with lateral lamellæ and bristles, its breadth toward the end one inch, where it terminates abruptly, but has a median, thin, horny, semicircular tip. The œsophagus is nine inches long, rather narrow, its general width being about five-twelfths. The stomach is roundish, compressed, an inch and a half in length and breadth, with very strong muscles, and radiated tendons; the epithelium dense, rugous, with two thick grinding plates. The intestine is very long and narrow, being nine feet nine inches in length, two-twelfths in breadth, beyond the middle enlarging a little, until at the cœca it attains a breadth of three-twelfths and a half. The cœca are four inches long, very narrow at the base, gradually enlarging to three-twelfths-and-a-half, narrowed but obtuse at the end; the rectum three inches and a quarter in length.

The trachea gradually enlarges from the breadth of two-twelfths-and-a-half to that of four-twelfths, and is composed of about an hundred rings, of which the lower are broader. The inferior larynx has a rounded bony expansion, of comparatively small size, on the left side. The bronchi are comparatively large, with about thirty-five half rings.

The nostrils are rather small, elliptical, and pervious. The eyes small, as are the ears. The legs are very short; the tibia bare for about four-twelfths of an inch; the tarsus much shorter than the outer toes, compressed, with about fifteen small anterior scutella, and about ten in the outer series, elsewhere reticulated with lozenge-shaped scales. The hind toe is very small, with ten scutella, and a narrow free membrane; the anterior toes are long and slender; the inner with a broad, two-lobed, thin margin, and only ten scutella, the basal phalanx being scaly; the middle toe with twenty-eight, extending to the base; the outer with twenty scutella and numerous basal scales; the fourth toe a little shorter than the third; the interdigital membranes reticulated, emarginate and crenato-

denticulate. The claws are slender, compressed, acuminate, moderately arcuate, that of the middle toe with the inner edge slightly dilated.

The plumage is soft, dense, elastic, and glossy. The feathers of the head and upper neck blended, of the occiput and nape considerably elongated, of the rest of the neck and lower parts obovate, of the sides elongated, of the back oblong. The inner scapulars elongated and acuminate. Wings of moderate length, moderately concave, rather narrow, pointed, with twenty-five quills; the primaries tapering, the first a twelfth of an inch shorter than the second, which is longest, the rest rapidly decreasing; the outer secondaries incurvate, and obliquely rounded; the inner elongated and acuminate. The tail is short, much rounded, of fourteen stiffish tapering feathers, of which the lateral are nearly an inch shorter than the medial.

The bill is entirely black, with a tinge of grey. The iris reddish-orange. The feet also reddish-orange, the claws dusky, with the tip horn-coloured. The head and upper half of the neck are glossy green, changing to purple; the top of the head, fore part of the cheeks, and throat black, with little green, the rest of the neck, and a small part of the breast white, excepting a longitudinal band of dusky behind, continuous with the greenish-black of the back, of which the anterior feathers are margined with white, and the posterior become gradually darker and more glossed with green, the tail-coverts having a brilliant tint. The outer anterior scapulars are white, the inner chiefly black; the outer posterior have the outer web pale blue, the inner web white; most of the rest have a white slender median band, and dusky green sides, the innermost black entirely. The small wing-coverts are light blue; the primary coverts and quills brownish-black, shaded with grey, and having the shafts white; several of the outer secondaries are largely tipped with white; the secondaries are greenish-black, but on eight of them the outer web is shining deep green, and the inner tapering feathers have a white streak toward the tip. The tail-feathers are brownish-grey, undulated and margined with white, which increases from the medial to the outer. The breast, sides,

and part of the abdomen are deep chestnut, tinged with purple; some of the anterior feathers barred and spotted with black, the ends of those of the sides paler and undulated with dusky lines. The axillar feathers, and most of the lower wing-coverts, are white, the larger, and those towards the edge, being pale grey. The sides of the rump are white; the feathers of the abdomen are obscurely barred with dusky, of those under the tail the anterior are white, undulated with dusky, the rest greenish-black, except the two longest under tail-coverts, which are dusky, variegated with white, and margined with reddish-brown.

Length to end of tail 20 inches; extent of wings 32; wing from flexure $9\frac{3}{4}$; tail 4; bill along the ridge $1\frac{7}{12}$, its breadth at the base $\frac{7}{12}$, near the end $1\frac{1}{4}$; tarsus $1\frac{4}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{3}{12}$, its claw $\frac{4}{12}$; third toe $1\frac{9}{12}$, its claw $\frac{6}{12}$; fourth toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female is considerably inferior in size, and differs greatly in colour. The feathers of the head and upper neck, although blended, are not glossy; and the scapulars and inner secondaries are much less elongated and pointed. The bill is greenish-brown above, with the unguis paler, and the margins inclining to yellow; the lower mandible dull orange, with the unguis brown. The iris yellow. The head and upper neck are pale reddish-brown, streaked with dusky, that colour being predominant on the upper part of the head. All the lower parts are of the same pale brown, on the middle of the breast inclining to white, and on the sides deeper, each feather with a dusky patch toward the end. On the upper parts the feathers are blackish-brown, edged with brownish-white. The smaller wing-coverts are brown, tinged with pale blue; the quills and larger coverts greyish-brown; the outer secondary coverts tipped with white, but less extensively than in the male; the green speculum duller and less extended; and all the secondaries more or less margined with white. The tail-feathers are greyish-brown, obliquely and broadly barred, and margined with white.

Length to end of tail 18 inches; extent of wings 29;

bill along the ridge $2\frac{4}{12}$; wing from flexure 9; tail $3\frac{1}{2}$; tarsus $1\frac{1}{4}$; middle toe $1\frac{9}{12}$, its claw $\frac{5}{12}$.

VARIATIONS.—Very great differences as to size occur in this species; but as it is of rare occurrence with us, I cannot specify instances. Great variations also occur as to colour; but they depend upon the gradual change of plumage which takes place in autumn, at which season the male assumes the appearance of the female, but resumes his proper colours by the beginning of winter.

HABITS.—Not having met with this bird alive, I am not qualified to give an account of its habits, of which, however, it is expedient to state what little can be obtained from the most approved authors. All our writers agree in considering it of rare occurrence in England, where it is met with chiefly in winter, and for the most part in the eastern counties. Some pairs, it is said, remain and breed in the marshy parts of the county of Norfolk. To the north of the Humber it is very seldom met with, and in Scotland no authentic instance of its occurrence at any season has come to my knowledge. Messrs. Baikie and Heddle, however, state that a male was shot in Sanday, in Orkney, by Mr. Strang, on the 24th May, 1833; and that in the state formerly named the Red-breasted Shoveller is not unfrequently seen on the lochs there. Mr. Thompson states that it is “a regular winter visitant to some parts of Ireland.” It resides in marshes, and on lakes and rivers, seldom occurring on the sea-coast, feeds occasionally on vegetable substances, but chiefly on fresh-water mollusca, worms, and insects, for sifting which from among the mud its bill is obviously adapted. But neither in this nor in any other Duck do the lamellæ of the two mandibles fit into each other, as many authors allege. It is impossible that they should, for those of the lower are always more slender and much more numerous than those of the upper mandible, and when the bill is closed pass within the upper, without intermingling with them.

Although uncommon in Britain, it is said to be plentiful in Holland, as well as in France and Germany. It is also

met with in various parts of Asia and Africa, as well as in America. Both in the latter country and in Europe, it does not in summer betake itself to the arctic regions, although many individuals of the species do, but disperses over the country, some remaining in the southern, others in the colder parts, whether in the interior or near the coasts. The nest is said to be placed on the borders of rushy lakes, and to contain about a dozen eggs, of a greenish-white colour, two inches and a sixth in length, an inch and a half in breadth.

MARECA. WIGEON.

THE Wigeons are in all respects precisely similar to many of the Teals, with the exception of having the bill shorter, proportionally broader, and rather narrowed, instead of becoming wider toward the end. In this respect they, of course, also differ from the Ducks properly so called. If our common Wigeon had the bill a little longer and narrower, it would occupy a position in immediate approximation to the Gadwall and Pintail. As it is, there is perhaps little necessity for separating it generically; but as it may be distinguished from them by the bill, and as the principle of minute subdivision has hitherto been followed by me, I may be excused for adopting the general opinion in this matter.

Bill considerably shorter than the head, higher than broad at the base, gradually depressed and narrowed toward the end, the breadth of which is somewhat less than that of the base; upper mandible with the lateral basal sinuses broadly rounded, the frontal angles very short and obtuse, the dorsal line gently sloping at first, then slightly concave and still sloping to the unguis, which is rather large, obovate, decurved at the end; the ridge broad and flattened at the base, gradually narrowed, convex beyond the nostrils, the sides at the base erect, toward the end convex, the edges slightly sinuous, the extremities of the numerous lamellæ narrow but rounded, and about the middle of the bill projecting a little, the nasal sinus small, elliptical, sub-basal, and near the ridge; lower mandible almost straight, with the intercrural space long, rather narrow, and bare, the crura slender, with their sides convex, gradually sloping more outwards toward the end, the unguis large, roundish, a little convex, the lateral lamellæ oblique and prominent, the upper very small, and rounded.

Mouth rather narrow; anterior palate concave, with a median papillate ridge, and on each side a series of striæ, besides the lateral lamellæ, which are well marked, but not

very prominent. Tongue fleshy, with a deep median groove, on each side of which is an oblique series of flattened horny papillæ, a double series of lateral filaments, its breadth nearly equal throughout, the tip thin and rounded. Œsophagus of moderate width, considerably enlarged before entering the thorax, and again narrowed; proventriculus oblong. Stomach a very large, transversely elliptical gizzard, placed obliquely, with very large muscles, and thick rugous epithelium, forming two roundish, flat, grinding surfaces. Intestine very long, rather wide, enlarging toward the cœca, which are very long and of moderate width; rectum very short.

Trachea nearly uniform; the lower larynx with several rings united so as to form an irregular dilatation, bulging out into a rounded sac on the left side; bronchi of moderate length and width.

Nostrils elliptical, sub-basal, in the fore part of the nasal membrane. Eyes small. Aperture of ear small. Legs very short; tibia bare for a short space; tarsus compressed, with small anterior scutella; hind toe very small, with a narrow, but distinct lobe; outer toe considerably shorter than the third, which is longer than the tarsus; interdigital membranes full, the outer slightly emarginate; claws small, well arched, compressed, acute.

Plumage dense, soft, and blended; feathers of the head and upper neck softer, those along the top of the head and nape rather long; of the other parts moderate, oblong; scapulars elongated and acuminate. Wings rather long, narrow, pointed, of twenty-five quills; primaries narrow, the first and second longest; inner secondaries elongated, tapering, acuminate. Tail small, short, tapering, of sixteen stiffish, acuminate feathers.

The males have the scapulars, inner secondaries, and tail-feathers, more elongated and acuminate than the females, from which they also differ in having the colour of the plumage more varied. The Wigeons frequent marshy places, pools, lakes, and rivers, feed on seeds, grass, roots, insects, and mollusca; immerse their necks while swimming; walk with ease, often betaking themselves to dry pastures, and have a rapid flight.

MARECA PENELOPE. THE EUROPEAN WIGEON.

COMMON WIGEON. WHEW DUCK. PANDLE-WHEW. YELLOW-POLL.
RED-HEADED WIGEON. BALDPATE. WHEWER. WHIM.

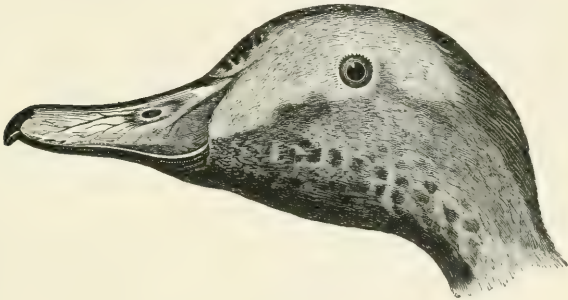


FIG. 65.

- Anas Penelope. Linn. Syst. Nat. I. 202.
Anas Penelope. Lath. Ind. Orn. II. 860.
Wigeon. Mont. Orn. Diet. and Suppl.
Canard siffleur. Anas Penelope. Temm. Man. d'Orn. II. 840.
Common Wigeon. Mareca Penelope. Selby, Illustr. II. 324.
Mareca Penelope. Wigeon. Jenyns, Brit. Vert. Anim. 236.
Mareca Penelope. Bonap. Comp. List, 56.

Male with a longitudinal ridge of rather elongated decurved feathers on the head and nape ; bill pale blue, with the tip black ; upper part of the head reddish-white ; cheeks and upper-neck brownish-red, dotted with black ; a longitudinal band of the latter on the throat ; fore part and sides of the lower-neck light vinaceous ; upper part and sides below the wings finely barred with white and dark grey ; wings grey, with a large patch of white ; the speculum green, with an anterior and a posterior band of black ; inner secondaries white, grey, and black ; tail grey ; upper tail-coverts partly black ; breast and abdomen white ; feathers under the tail black.

MALE IN WINTER.—This beautiful bird presents numerous modifications of colouring, individuals in the perfected plumage of the adult being comparatively rare. The following description is taken from a fine specimen, shot in the south of Scotland, and selected from a multitude for the purpose. The body is oblong, slightly depressed; the neck rather long and slender; the head of moderate size, compressed, and well rounded above. The bill is considerably shorter than the head, scarcely higher than broad at the base, gradually depressed toward the end, where it is somewhat narrower than at the base. The frontal angles are small, the flattened part of the ridge short, the upper unguis obovato-triangular, convex, and decurved, the lower broad and little convex. On each side of the upper mandible are about forty-five little elevated lamellæ, the compressed, narrow, and rounded tips of which project a little beyond the margin, from near the base to the end of the bill; on the lower are thirty external, and sixty marginal lamellæ. The tongue is an inch and five-twelfths long, with numerous straight, pointed papillæ at the base, a median longitudinal groove, lateral bristles, and a thin broadly-rounded point. The œsophagus is ten inches long, from five to six-twelfths in width; the proventriculus nine-twelfths broad. The stomach is oblique, transversely oblong, an inch and ten-twelfths in length, two inches and seven-twelfths in breadth; the lateral muscles extremely developed, the right being an inch and a twelfth and a half thick, the left an inch and three-fourths; the epithelium dense, rugous, with flat grinding surfaces. The intestine is six feet three inches long, five-twelfths wide in the duodenal portion, gradually decreases, then enlarges to nine-twelfths. The cœca are eleven inches long, two-twelfths wide at the base, six-twelfths in their greatest width; the rectum six inches long.

The trachea is eight inches long, with about a hundred and forty rings, of nearly equal width throughout, but at the lower part with a transversely oblong bony dilatation, bulging out on the left side in a rounded form, and an inch in its greatest diameter. The bronchi are of moderate length, but wide, and of about twenty-five half-rings.

The nostrils are elliptical, patulous, a quarter of an inch long. The eyes small, three-twelfths and a half across. The aperture of the ear round, two-twelfths in width. The legs very short; the bare part of the tibia five-twelfths long; the tarsus compressed, reticulate, with eighteen anterior scutella; the hind toe with eight, the inner with fourteen and numerous basal scales; the third with thirty in its whole length; the fourth with forty. The claws are small, well arched, compressed, acute, that of the middle toe little dilated, the hind toe more decurved.

The plumage is dense, soft, and blended. The feathers of the head and upper neck are slender, those on the upper part of the head and nape considerably elongated. On the other parts they are generally elliptical. The scapulars are elongated, and taper to an obtuse point. The wings are rather long, rather narrow, pointed, with twenty-six quills; the primaries tapering, but obtuse; the outer secondaries incurvate and rounded; the inner elongated, narrow, tapering, rather acute. The second quill is scarcely longer than the first, of which the tips of the filaments are separated, capillary, and curved outwards, as in all the Teals. The tail is short, rounded, of fourteen feathers, of which the two medial are more pointed, and project two-thirds of an inch beyond the next.

The bill is light greyish-blue, with the tip, including the unguis, black. The iris is hazel-brown. The feet light greyish-blue, the membranes darker, the claws black. From the base of the upper mandible to the occiput is an oblong, reddish-white patch. The rest of the head and the upper-neck brownish-red, most of the feathers with a small blackish-green spot on the tip; the tips of those on the throat are black to a greater extent, forming a broad longitudinal band. The feathers on the hind part of the neck, the whole of the back, and the scapulars, are beautifully and delicately transversely undulated with blackish-grey and white; some of the feathers on the rump margined with white. The anterior wing-coverts, secondary coverts, and tertiaries, are brownish-grey, the former faintly undulated with greenish-white, but many of the coverts are pure white, forming a large patch;

the secondary coverts tipped with black. The alula, primary coverts, and primary quills, are brownish-grey; the outer secondary quills, to the number of nine, with their outer webs duck-green at the base, black toward the end; the next, or first inner secondary chiefly white, narrowly edged with black; the rest black, edged with white externally, and grey internally. The upper tail-coverts are black, several of those in the middle broadly edged with white internally. The tail-feathers are brownish-grey, narrowly tipped with white. The lower fore part and sides of the neck are of a delicate lilac, or pale purplish-red colour, tinged with grey; the breast, abdomen, and side of the rump, pure white; the sides finely barred with dark-grey and white, like the back; the feathers under the tail black; the lower wing-coverts most delicately dotted with white and grey, the larger coverts pale grey; the axillars white, mottled with grey.

Length to end of tail $20\frac{3}{4}$ inches; extent of wings 35; wing from flexure $10\frac{3}{4}$; tail $4\frac{1}{2}$; bill along the ridge $1\frac{8}{12}$; from frontal angles $1\frac{1}{2}$; its height at the base $\frac{9}{12}$; breadth at the middle $\frac{9}{12}$; behind the unguis $\frac{7}{12}$; bare part of tibia $\frac{5}{12}$; tarsus $1\frac{7}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{4}{12}$; third toe $1\frac{9}{12}$, its claw $\frac{5}{12}$; fourth toe $1\frac{7}{12}$; its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female is much smaller and differently coloured. The bill, iris, and feet, however, are as in the male. The head and upper neck are yellowish-red, with small greenish-black spots, the feathers being barred with that colour, of which there is more on the upper part of the head. The feathers of the upper parts in general are dusky brown, edged with brownish-red or whitish, and barred with the same. The wings are dusky grey; the coverts in the part which is white in the male tipped with that colour, the secondary coverts with an indication of the dark terminal bar; the speculum greyish, without lustre; the inner secondaries marked somewhat as in the male, but with dark grey in place of black. The tail-feathers brownish-grey, edged with brownish-white. On the lower fore part and sides of the neck the feathers are obscurely barred with reddish-brown and brownish-grey; the sides are similar;

the breast and abdomen white; the feathers under the tail white, barred with brown, as are the smaller lower wing-coverts; the larger pale grey. The stomach an inch and a half in length, two inches and a quarter in breadth; the intestine five feet six inches long; the cœca nine inches in length, two-twelfths in breadth at the base, and four-twelfths in their widest part.

Length to end of tail $19\frac{1}{4}$ inches; extent of wings $32\frac{1}{4}$; wing from flexure 10; tail 4; bill along the ridge $1\frac{1}{2}$, from frontal angles $1\frac{8}{12}$, its height at the base $\frac{9}{12}$, breadth at the middle $\frac{8}{12}$, behind the unguis $\frac{7}{12}$; bare part of tibia $\frac{5}{12}$; tarsus $1\frac{1}{2}$; hind toe $\frac{4}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{3}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{1}{4}$, its claw $\frac{4}{12}$; fourth toe $1\frac{8}{12}$, its claw $\frac{3}{12}$.

VARIATIONS.—In adult males in winter the white on the upper part of the head varies in extent and in tint, being more or less tinged with red; the black spots on the head and neck are more or less numerous; the black on the throat continuous or in spots; the light vinaceous tint on the lower part and sides of the neck more or less red or grey. The tints on the other parts also vary. The females vary much less in colour. Younger individuals, however, exhibit a great variety of appearances.

HABITS.—The Wigeons begin to make their appearance in Britain toward the end of September, gradually increase in number, disperse over most parts of the country, continue through the winter and spring, and depart in the end of March and beginning of April. In the north of Scotland they are uncommon; on its north-west coast scarcely ever seen; in the outer Hebrides, I believe, never; but in Orkney they are very numerous, and may be seen on all the lochs; and as we proceed southward we find them gradually becoming more plentiful, until in the southern parts of England they are more abundant than any other species of Duck. Montagu states that it “appears to be the most plentiful species of Duck that is taken in our decoys. More are caught in the decoys of Somersetshire and Devonshire than Duck, Teal, and all other wild fowl collectively, as we are

assured by an old and experienced decoy-man." They not only frequent rivers and lakes, but occur in estuaries, and even along the open coast, especially in bays where the bottom is more or less muddy. Their food consists of aquatic plants, especially their roots, algæ, and mollusca, which they procure, not by diving, but in the same manner as the Ducks and Teals. They are frequently seen in very large flocks, but usually in small bodies, seldom intermingling with other species. They swim with great ease, and have a rapid direct flight, taking wing easily from the water, and producing a whistling sound as they fly. They are much addicted to garrulity, and at night especially emit a whistling cry, on account of which they have obtained the name of Whew-Ducks. Vast numbers are shot, and from October to April they are the most common Ducks in our markets, perhaps with the exception in some towns of the Mallard. As food they are less esteemed than that bird, but more so than the sea-ducks in general, their flesh being savoury and highly flavoured. Their price varies from eighteenpence to three shillings or more, according to their abundance and the locality. As is the case with the Brent Goose and several species of Duck, their flesh varies in flavour according to the nature of their food, those which have long fed on the sea-coast being less savoury than such as have been obtained inland.

It does not appear that any remain in England to breed; nor was it suspected to make any part of Scotland its summer residence, until a band of naturalists, exploring the wilds of Sutherland in the summer of 1834, found it in the deserted haunts of the Gael. "As the Wigeon," says the historian of the expedition, Mr. Selby, "had not previously been detected breeding in Britain, we were much pleased to observe several pairs upon the smaller lochs near Lairg, which we concluded had their nests among the reeds and other herbage which grew in their vicinity. We were not so fortunate, however, as to find one here, though diligent search was made; but afterwards, upon one of the islands of Loch Laighal, we sprung a female, which we shot, from her nest containing seven eggs. It was placed in the heart of a large

rush bush, and was made of decayed rushes and reeds, with a lining of warm down from the bird's body. The eggs were smaller than those of the Wild Duck, and of a rich cream-white colour." In Ireland, "the Wigeon is plentiful in the numerous suitable localities around the coast, and on the lakes and rivers;" but has not been found breeding there.

On the continent it resorts to the northern regions in summer, and returns southward in winter. It is said to occur in the northern parts of Asia. I have specimens from Bengal precisely similar to others obtained in Scotland. The American Wigeon, so similar as to be scarcely distinguishable, if not indeed the same, occurs from the extreme north to the Gulf of Mexico.

The Wigeon is easily reconciled to captivity, but has not been known to breed in that state, although, as related by Lord Stanley to Montagu, the male has bred with a female Pintail, as well as with a common Duck.

YOUNG.—The appearance of the young in their down covering I am unable to describe. In autumn they resemble the adult female; but so many gradations of colouring are presented by individuals at this period, as well as subsequently, that I do not consider it expedient to attempt their description.

MARECA AMERICANA. AMERICAN WIGEON.

- Anas Americana. Wils. Amer. Ornith. VIII. 86.
 Anas Americana. Aud. Amer. Ornith. Biog. IV. 337.
 Anas Americana. Nuttall. Man. II. 389.
 American Wigeon. Yarr. Brit. Birds, III. 196.
 Mareca Americana. Bonap. Comp. List, 56.

Male with a longitudinal ridge of rather elongated decurved feathers on the head and nape; bill pale blue with the tip black; upper part of head white; cheeks and upper neck brownish-red dotted with black; a broad band from the eye to the occiput deep green; throat brownish-black; fore part and sides of the lower neck light vinaceous; upper parts and sides below the wings finely barred with white and dusky; wings brownish-grey, the secondary coverts white, tipped with black; the speculum green, with an anterior and a posterior band of black; inner secondaries white, grey, and black; tail light brownish-grey: upper tail-coverts partly black; breast and abdomen white; feathers under the tail black.

MALE.—The Wigeon of America so closely resembles that of Europe, Africa, and Asia, that, after comparing a great number of specimens, I am unable to find any characteristic differences that can be depended upon. The American birds generally have the head and neck more dotted with black, a larger green band behind the eye, the bill slightly narrower, and the osseous expansion of the lower part of the trachea much smaller. In this latter respect, however, I have examined only one specimen of the American bird.

The form and proportions, the texture of the plumage, and the relative length of quills and tail-feathers being the same in both, I shall confine my description to that of the colouring. The bill is light greyish-blue, with the tip, including the unguis, and a portion of the margins, black.

The feet light bluish-grey, the membranes darker, the claws black. The whole upper part of the head reddish-white, a broad band from the eye to the occiput deep green; the loreal spaces and cheeks reddish-white, dotted with greenish-black; the upper neck brownish-red, similarly dotted. The feathers on the hind part of the neck, the fore part of the back, and the scapulars, are minutely transversely undulated with dusky and pale red, passing behind into grey; the hind part of the back similarly undulated with dusky and greyish-white. The anterior wing-coverts brownish-grey; the primary coverts dusky; the secondary coverts white, tipped with black. The alula and primary quills brownish-grey; the outer secondary quills, to the number of nine, have their outer webs duck-green at the base, black toward the end; the next, or first inner secondary, chiefly white, narrowly edged with black; the rest black, margined with white, their inner webs brownish-grey. The tail-feathers light brownish-grey. The throat brownish-black; the lower fore part and sides of the neck light brownish-red; the breast, abdomen, and sides of the rump white; the sides of the body under the wings finely undulated with white and dark grey; the rump beneath and the lower tail-coverts black.

Length to end of tail 22 inches; wing from flexure 11; tail $4\frac{1}{2}$; bill along the ridge $1\frac{8}{12}$, from frontal angles $1\frac{10}{12}$, its height at the base $\frac{9}{12}$, its breadth at the middle $\frac{8}{12}$; bare part of tibia $\frac{5}{12}$; tarsus $1\frac{7}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{2}{12}$; third toe $1\frac{8}{12}$, its claw $\frac{5}{12}$.

FEMALE.—The female is much smaller, and differently coloured. The bill and feet, however, are as in the male. The head and upper neck are reddish-white, streaked with brownish-black, the top of the head barred. The feathers of the upper parts in general are dusky-brown, edged with brownish-red, and barred with the same. The wings are greyish-brown; the secondary coverts white toward the end; the primary quills greyish-brown, the outer secondary quills brownish-black, the inner greyish-brown, with the outer margin white. The tail-feathers brownish-grey, margined with white. On the lower fore part and sides of the neck

the feathers are dusky, barred and broadly margined with reddish-brown. The feathers of the sides, and under the tail, are broadly barred with dusky and light reddish-brown, as are the smaller lower wing-coverts, the larger grey; the other lower parts white.

Length to end of tail 19 inches; wing from flexure $9\frac{9}{12}$; tarsus $1\frac{6}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

VARIATIONS.—Among males I have never seen two individuals exactly alike. The females are pretty uniform. The young vary extremely. The differences observed I am unable to refer to any distinct formula. The European birds are similar in this respect; and they so resemble the American, that in a collection of both I could not distinguish with certainty those of the two continents.

HABITS.—Viewed as British, the American Wigeon has been recognised by Mr. Bartlett, in London, in the winter of 1837, two specimens, a male and a female, having attracted his regard in the midst of a row of common Wigeons. He left the female, however, but preserved the male, which has been figured and described by Mr. Yarrell. Mr. Blyth had previously given an account of it in the third volume of the Naturalist. Its “tracheal labyrinth” was small, “scarcely exceeding in magnitude that of a Teal.” This was also the case with that of a male from America, which I dissected for Mr. Audubon, and of the digestive and respiratory organs of which I have given an account, together with a figure, in the fourth volume of the Ornithological Biography of that enthusiastic ornithologist, who, however, on bringing together a number of American and European skins, could no more than myself see any specific difference among them. It is not known where Mr. Bartlett’s London specimens were shot. Mr. Thompson mentions an adult male shot on Strangford Lough, in the spring of 1844, by Henry Bell, a Wigeon-shooter, who had killed other but less mature individuals in Belfast Bay.

FULIGULINÆ.

SCAUP-DUCKS AND ALLIED SPECIES.

As between the Anserinæ and Anatinæ, so between the latter and the Fuligulinæ there are no precise limits, although the three groups present peculiarities of form and habits sufficient to give countenance to their separation. The Fuligulinæ, popularly designated as Sea Ducks, have the body of a less elongated form, fuller, and more depressed; the neck shorter, and generally much thicker; the head larger; and the hind toe with a conspicuous membranous lobe.

Bill about the length of the head, or shorter, nearly as broad as high at the base, gradually depressed toward the end, where it is rounded; the upper mandible with the basal lateral sinuses and frontal angles various, the ridge flattened at the base, the sides convex toward the end, the unguis obovate, or roundish, decurved. Mouth rather narrow; the upper mandible internally concave, with a median prominent line, and on each side a series of transverse thin lamellæ. Similar, but smaller, and more numerous lamellæ on the sides of the lower mandible. Tongue fleshy, with a deep medial groove above, lateral series of bristles, and a thin broadly-rounded tip. Œsophagus of moderate width, or rather narrow; stomach a very large, transversely elliptical gizzard, placed obliquely, with very large muscles, thick and rugous epithelium, and somewhat concave grinding surfaces; intestine very long, and of moderate width; cæca long, and rather wide. Trachea often with dilatations; the lower larynx with a very large osseous or partly membranous dilatation, bulging more on the left side.

Nostrils moderate or small, oblong, in the fore part of the

nasal sinus ; eyes small, as are the apertures of the ears. Legs very short, placed rather far behind ; tibia bare for a very short space ; tarsus very short, compressed, with anterior short scutella ; hind toe small, with an inferior compressed lobe ; two outer toes about equal, and longer than the tarsus ; interdigital membranes full ; claws small, slender, arcuate, compressed, obtuse, that of the third toe with the inner edge expanded.

Plumage dense, elastic, firm, glossy ; feathers of the head and neck slender, and blended ; wings short, convex, narrow, pointed, the first and second quills longest ; inner secondaries elongated and tapering ; tail generally small, much rounded or tapering, of more than twelve feathers.

The Fuligulinæ are essentially carnivorous. Some of them, approaching the Anatinæ in form and habits, frequent fresh-water, and feed on mollusca, insects, and occasionally plants. Most of them, however, are essentially marine birds, frequenting bays and estuaries, or the shallow parts of the open coasts, and feeding on mollusca, crustacea, and sea-plants, for which they dive. They are all expert swimmers, as well as divers, and have a rapid and direct flight ; but walk little and ungracefully, owing to the shortness and position of their feet. They are gregarious and migratory. The males are larger, and usually differently coloured. They form their nests on the shores of the sea, on islands, or unfrequented headlands, but also by lakes or rivers, often lining them, or covering their eggs, with down plucked from their bodies. The eggs are moderately numerous, smooth-shelled, white or greyish, greenish or blueish, but always of one colour. The young, densely covered with stiffish down, presently betake themselves to the water, where they swim and dive with the greatest expertness. When incubation has commenced, the males desert the females, and flock by themselves.

Representatives of this family occur in all climates, but are more numerous in the temperate and cold regions. Their flesh is little esteemed, being generally very dark-coloured and rank, though a few species are lauded for their peculiarly rich flavour.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. AYTHYA. POCHARD.

Bill as long as the head, higher than broad at the base, becoming depressed toward the end, of nearly equal breadth throughout; upper mandible with the frontal angles acute, the basal lateral sinuses short and wide, the ridge broad and flat at the base; the sides at first nearly erect, the edges soft, marginate, concealing the ends of the numerous little elevated lamellæ; the unguis small, oblong, flattened, and decurved; that of the lower mandible obovate, rather small, and little convex; legs very short; tarsus compressed; hind toe very slender, with a narrow membrane; outer toes about equal, and double the length of the tarsus; interdigital membranes emarginate; claws small, slender, rather pointed; wings short, convex, narrow, pointed, the first quill longest; tail very small, much rounded, of fourteen stiffish tapering feathers.

1. *Aythya Ferina*. *Red-headed Pochard*. Bill black to a little beyond the nostrils and at the end, the intermediate space light greyish-blue; head and upper neck brownish-orange, lower part of neck black; fore part of the back minutely undulated with dark grey lines on a greyish-white ground.

2. *Aythya rufina*. *Red-crested Pochard*. Bill and feet vermilion; head tufted, and with the upper neck brownish-red; lower neck, breast and abdomen blackish-brown; back light brown; an oblong spot on the shoulders, the edge of the wing anteriorly, the outer secondary quills, and the sides of the body white.

GENUS II. FULIGULA. SCAUP-DUCK.

Bill nearly as long as the head, about the same height and breadth at the base, becoming depressed and enlarging in breadth to the end, which is very broad and semicircular; upper mandible with the frontal angles obtuse, the basal

lateral sinuses very short and wide, the ridge broad and flat at the base, the sides at the base rapidly sloping, the edges soft, marginate, concealing the ends of the numerous, little elevated lamellæ, the unguis small, obovato-oblong, flattened and decurved; that of the lower mandible obovate, rather small, and nearly flat; legs very short; tarsus compressed; hind toe very slender, with a broad membrane; outer toes about equal, and double the length of the tarsus; interdigital membrane emarginate; claws small, slender, rather pointed; wings short, convex, narrow, pointed, the first quill longest; tail very small, much rounded or cuneate, of fourteen stiffish, tapering feathers.

1. *Fuligula Nyroca*. *Ferruginous Scaup-Duck*. Bill dusky-blue; head, neck, fore part of breast, and sides, chestnut-red; the neck with an obscure brown ring; upper parts blackish-brown, glossed with green; speculum white, with a terminal black bar; lower parts white.

2. *Fuligula Marila*. *Broad-billed Scaup-Duck*. Bill light greyish-blue, with the unguis blackish; head and upper-neck greenish-black; lower-neck and fore part of breast and back black; back and wing-coverts greyish-white, finely undulated with dusky; speculum and lower parts white.

3. *Fuligula cristata*. *Tufted Scaup-Duck*. Bill greyish-blue, with a terminal black band; feathers of the head elongated into a large decurved crest; head and upper-neck purplish-black; back black, minutely dotted with white; speculum, breast, and sides, white.

GENUS III. OIDEMIA. SCOTER.

Bill nearly as long as the head, about the same height and breadth at the base, becoming depressed and flattened toward the end, which is rounded; upper mandible with a prominence at the base above, and a more extended enlargement on each side, the basal lateral sinuses very wide, the sides at the base erect, the edges thin, concealing the ends of the not very numerous lamellæ, the unguis very large, broadly elliptical, little convex, at the end decurved; that of the lower mandible very large, broadly elliptical; legs very short;

tarsus compressed ; hind toe slender, with a pretty large membrane ; outer toes about equal, and nearly double the length of the tarsus ; interdigital membranes full ; claws small, compressed, obtuse ; wings rather short, convex, narrow, pointed, the first and second quills longest ; tail very short, much rounded, or tapering, of fourteen or sixteen stiffish, narrow feathers.

1. *Oidemia perspicillata*. *Surf Scoter*. Bill mostly orange-red ; upper mandible with a nearly square patch on each side at the base, margined anteriorly with a bluish-white space, unguis greyish-yellow ; feet orange-red, with dusky membranes ; plumage black ; a patch of white on the top of the head, another on the hind-neck.

2. *Oidemia fusca*. *Velvet Scoter*. Bill with the base and margins of both mandibles black, the unguis of both red, the sides of the upper orange ; feet orpiment-orange on the inner, lake-red on the outer side ; plumage black ; speculum, and a spot below the eye, white.

3. *Oidemia nigra*. *Black Scoter*. Bill black, with an orange-yellow patch on the upper mandible, including the nostrils ; feet dusky ; plumage entirely black ; first quill very narrow.

GENUS IV. SOMATERIA. EIDER.

Bill nearly as long as the head, higher than broad at the base, becoming depressed toward the end, where it is considerably narrowed, but rounded ; upper mandible with the lateral sinuses very large, the upper long and very narrow, the frontal angles elongated, soft, and tumid, the sides erect at the base, the edges thin, concealing the not very numerous slender lamellæ, the unguis extremely large, elliptical, convex, moderately decurved ; that of the lower mandible very large, broadly elliptical, little convex ; legs very short ; tarsus compressed ; hind toe slender, with a broad lobiform membrane ; outer toes nearly double the length of the tarsus ; interdigital membranes emarginate ; claws small, compressed, obtuse ; wings rather short, very convex, narrow, pointed, the first and second quills longest ; inner secondaries elon-

gated, tapering, curved outwards ; tail very short, much rounded, or tapering, of fourteen or sixteen stiffish, narrow, pointed feathers.

1. *Somateria mollissima*. *Common Eider*. Bill with the frontal angles very narrow, fleshy, little elevated ; head black above, with a medial white band ; hind part of the cheeks and nape pale green ; back white ; breast and abdomen black ; tail of sixteen feathers.

2. *Somateria spectabilis*. *King Eider*. Bill with the frontal angles very broad, rounded, fleshy, and much elevated ; upper part of the head and nape light greyish-blue ; cheeks pale-green ; two black bands meeting anteriorly at a very acute angle on the throat ; back black, as are the lower parts ; tail of fourteen feathers.

GENUS V. STELLERIA.

Bill shorter than the head, as high as broad at the base, gradually depressed to the end, which is rounded ; upper mandible with the lateral sinuses large, the frontal angles short, the sides erect at the base, concealing the lamellæ, the unguis large, elliptical ; legs very short ; tarsus compressed ; outer toes nearly double the length of the tarsus ; wings rather short, convex, pointed ; inner secondaries elongated, tapering, curved outwards ; tail very short, rounded, of sixteen stiffish feathers.

1. *Stelleria dispar*. *Pied Stelleria*. White above, ferruginous beneath ; throat, a broad ring on the neck, and back, black ; speculum green ; elongated secondaries white on the inner, bluish-black on the outer web.

GENUS VI. CLANGULA. GARROT.

Bill shorter than the head, much higher than broad at the base, becoming gradually depressed and considerably narrowed to the end, which is rounded ; upper mandible with the lateral sinus broad and rounded, the basal angles short or moderate, the edges thin, concealing the not much elevated lamellæ, the unguis large and convex ; that of the lower

mandible very large, broadly elliptical, little convex ; legs very short ; tarsus compressed ; hind toe very slender, with a broad lobiform membrane ; outer toes nearly double the length of the tarsus ; interdigital membranes full ; claws small, compressed, rather obtuse ; wings short, narrow, convex, pointed ; second quill longest, but scarcely exceeding the first ; inner secondaries elongated, and curved outwards ; tail short, graduated, of sixteen stiffish, pointed feathers.

1. *Clangula histrionica*. *Harlequin Garrot*. Bill yellowish-brown ; feet greyish-blue ; membranes dusky ; head, upper-neck, and upper parts of the body, dusky greyish-blue ; a triangular white patch before the eye, a round spot behind the ear, a longitudinal mark on the neck, a narrow collar about its middle, a band across its lower fore part, some of the scapulars, the tips of the secondaries, and a spot on the side of the rump, white ; lower parts purplish-blue and brownish-grey.

2. *Clangula chrysophthalma*. *Golden-eyed Garrot*. Bill black ; feet orange-yellow, with the membranes dusky ; head and upper-neck glossy deep-green, with purple tints ; a large ovate white spot between the cheek and the bill ; lower-neck, sides, and abdomen, white ; upper parts black ; a large white space on the wing.

3. *Clangula Albeola*. *Buffel-headed Garrot*. Bill dusky-grey ; feet pale flesh-colour, with the membranes dusky ; head and upper-neck glossy green and purple ; a triangular band of white from the cheek to the nape ; lower neck, sides, and abdomen, white ; upper parts black ; a large patch on the wing, and some of the scapulars, white.

GENUS VII. HARELDA. HARELD.

Bill much shorter than the head, of the same height and breadth at the base, narrowed toward the end ; upper mandible with the frontal angles obsolete, the dorsal line sloping ; the ridge broad at the base, roundish, convex, decurved, the laminae projecting considerably beyond the margin, the unguis large, roundish, convex, decurved ; that of the lower mandible broadly elliptical, little convex ; legs very short ; tarsus

compressed ; hind toe very small, with a lobiform membrane ; outer toes equal, and about double the length of the tarsus ; membranes full ; claws small, slender ; wings short, convex, acute ; the first and second quills about equal and longest ; tail small, pointed, of fourteen feathers.

1. *Harelda glacialis*. *Long-tailed Hareld*. Bill black, red toward the end, the unguis black ; feet dull orange-red ; head and neck white ; cheeks grey ; fore part of breast, back, wing-coverts, and elongated tail-feathers, blackish-brown ; scapulars and lower parts white.

The subjoined figures represent the hind toes of the Anatinæ and Fuligulinæ, the marginal membrane being narrow in the former and very broad in the latter.

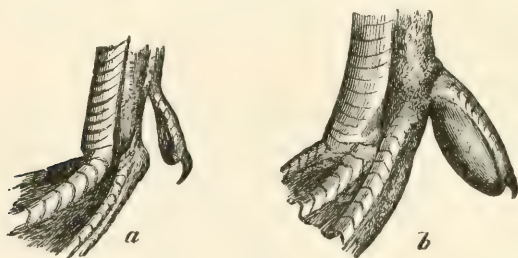


FIG. 66.

AYTHYA. POCHARD.

THE Pochards, of which the most characteristic species are the celebrated Canvas-back of America, and the common Red-headed Pochard of that continent as well as of Europe, differ from the Scaup-Ducks in no other essential respect than in having the bill narrower and more elongated, and the membrane of the hind toe of less breadth. They may be described as having the body very large, full, and depressed; the neck moderate; the head rather large, oblong, compressed, and rounded above.

Bill as long as the head, higher than broad at the base, becoming depressed toward the end, of nearly equal breadth throughout; the upper mandible with the basal lateral sinuses short and wide, the upper sinus rather narrow, the frontal angles acute, the dorsal line declinate for half its length, then direct to the unguis, which is small, oblong, flattened, and decurved; the ridge broad and flat at the base, gradually narrowed, convex toward the end, the sides at the base nearly erect, toward the end gradually more spreading and convex; the edges soft, marginate, concealing the ends of the numerous, little elevated lamellæ; the nasal sinus rather small, oblong, sub-basal; lower mandible with the intercrural space very long, rather narrow, the crura slender, with their lower outline slightly recurvate, the outer lamellæ small, the unguis obovate, rather small, and little convex.

Mouth rather narrow; anterior palate broadly concave, with a median prominent line, on which are a few tubercles; the lateral lamellæ slender, little elevated; those of the lower mandible about double the number. Tongue fleshy, with a deep median groove, papillate at the base, lamelloso-filamentous on the margins, with the tip thin and somewhat

semicircular. Œsophagus rather wide ; proventriculus oblong. Stomach a very muscular gizzard, of a transversely elliptical form, placed obliquely, with longitudinally rugous epithelium, forming thick, somewhat concave circular grinding plates. Intestine very long and wide ; cæca long, of moderate width ; rectum very short.

Nostrils small, in the lower and fore part of the nasal sinus ; eyes small ; ears very small. Legs very short, placed rather far behind ; tarsus compressed, with small anterior scutella ; hind toe very slender, with a narrow membrane ; outer toes about equal, and double the length of the tarsus ; interdigital membranes emarginate ; claws small, slender, little arched, rather pointed.

Plumage dense, firm, glossy ; feathers of the head and neck very soft, blended, silky or velvety ; of the other parts moderate, ovate. Wings short, convex, narrow, pointed, of twenty-six quills ; primaries narrow, the first longest. Tail very small, much rounded, of fourteen stiffish, tapering feathers.

Brown, grey, white, and brownish-red are the prevailing colours of the plumage. The females have the colours less decided, brown being substituted on the upper parts and sides, and the markings larger. The young resemble the females. This genus is one of those which approach nearest to the Anatinae, and the species are by no means exclusively marine, although in winter they frequent estuaries, and even the open shores, feeding chiefly on the rhizomata of *Valisneria*, *Zostera*, and other plants. In summer they reside chiefly in fresh-water marshes and lakes, where they breed, and feed on larvæ, insects, and mollusca. They are not expert at walking, but swim and dive with great ease, and have a rapid, direct flight. When fed on vegetable substances they afford good eating, the flesh of one species, *Aythya Valisneriana*, being in America celebrated above that of every other Duck, although it is very probably in no degree different from that of *Aythya Ferina*, which, although well-flavoured, is not, I think, to be compared with that of *Anas Boschas*, or any of the Teals. Three species occur in Britain.

AYTHYA FERINA. THE RED-HEADED POCHARD.

POKER. RED-HEADED POKER. GREAT-HEADED POKER OR WIGEON.
DUNBIRD. DUNCUR OR DUNKER.

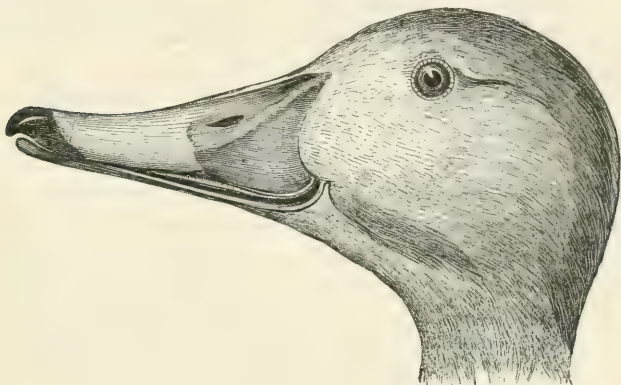


FIG. 67.

Anas Ferina. Linn. Syst. Nat. I. 203.

Anas Ferina. Lath. Ind. Ornith. II. 862.

Canard Milouin. *Anas Ferina.* Temm. Man. d'Ornith. II. 868.

Pochard. Mont. Ornith. Dict. and Suppl.

Red-headed Pochard. *Fuligula Ferina.* Selby, Illustr. II. 347.

Common Pochard. *Fuligula Ferina.* Jenyns, Brit. Vert. Anim. 241.

Aythya Ferina. Bonap. Comp. List, 58.

Male eighteen inches long, with the bill rather narrow, two inches in length, of the nearly uniform breadth of eight-twelfths, black at the base and tip, dull light blue elsewhere; feathers of the forehead stiffish; head and half of neck brownish-red, lower part of neck and hind part of back brownish-black; back greyish-white, minutely undulated with dark-grey; secondary quills ash-grey; lower parts greyish-white, minutely undulated; hind part of abdomen and lower tail-coverts dusky; tail greyish-brown, of fourteen feathers. *Female* with less blue on

the bill, the head and hind neck reddish-brown ; the fore part of the cheeks paler ; the lower part of the neck all round and the back greyish-brown, the latter obscurely undulated with white ; the rest as in the male, but duller, and the sides dusky. Young like the female.

MALE IN WINTER.—The Red-headed Pochard, although nearly resembling the celebrated American Canvas-backed Duck, is not liable to be mistaken for any British species. Its body is large, full, depressed, of an elliptical form ; the neck rather long, and thick ; the head large, oblong, compressed, rounded above.

The bill is about the same length as the head, higher than broad at the base, of almost equal breadth throughout, being but very slightly wider toward the end, which is rounded ; upper mandible with the lateral basal margins concave, the upper acutely emarginate, the frontal angles narrowly pointed, the ridge broad, rather concave, gradually narrowed, convex toward the end, the dorsal line straight and declinate to beyond the nostrils, then slightly concave ; the sides nearly erect at the base, becoming gradually more declinate and convex, the edges marginate, concealing the internal oblique lamellæ, of which there are about sixty, the unguis small, oblong, abruptly rounded at the end ; nasal space small, elliptical, sub-basal ; lower mandible flattened, with the intercrural space very long and rather narrow, the crura slender, their lower outlines slightly rearcuate, the dorsal line nearly straight, the edges erect, with about seventy lamellæ, the unguis obovato-triangular, being abruptly rounded.

The mouth is rather narrow. The tongue fleshy, deeply grooved above, an inch and ten-twelfths long, six-twelfths and a half in breadth, its sides furnished with two series of bristly filaments, the tip thin, horny, rounded. The œsophagus is eleven inches long, of moderate width, from five to eight-twelfths in breadth ; the proventriculus nine-twelfths in breadth, its glandules cylindrical, and two-twelfths long. The stomach extremely muscular, oblique, elliptical, compressed, two inches and a half in length, an inch and three-fourths in breadth ; the lateral muscles more than half an

inch thick ; the epithelium rather thin, dense, slightly rugous, with two circular grinding plates of thicker texture ; the upper part forming a small pyloric sac ; the pylorus without valve. The intestine is five feet four inches long, four-twelfths in width at its upper part, at the middle six and a half-twelfths, near the cœca five-twelfths. The cœca seven inches long, nearly cylindrical, four-twelfths in width, a little narrower toward their commencement, and five and a half inches distant from the extremity of the intestine.

The nostrils are oblong, three-twelfths in length, sub-medial, near the ridge, pervious ; the eyes small, three-twelfths across ; the aperture of the ear only a twelfth and a half. The feet are very short, and placed rather far behind ; the tarsus very short, compressed, with seventeen anterior small scutella, eight outer scutella, the rest covered with angular scales. The hind toe small, with eleven double scales, and a narrow inferior membrane ; the inner toe with thirty scutella, the third thirty-six, the fourth forty ; the two outer toes about equal, and nearly double the length of the tarsus ; the interdigital membranes anteriorly emarginate. The claws are small, slender, arched, compressed, obtuse, that of the third toe with its inner edge expanded.

The plumage is dense, soft, glossy, and blended ; the feathers of the fore part of the head small, and stiffish ; of the rest of the head and neck very soft, and silky ; of the lower neck obovate and abrupt. The wings are short, curved, narrow, and pointed ; the primaries strong, tapering, the first longest, the second slightly shorter, the rest rapidly decreasing ; the secondaries fifteen, broadly rounded, the outer somewhat emarginate, the inner elongated and tapering. The tail is very short, much rounded, of fourteen stiffish, narrowly rounded feathers.

The bill is black to a little beyond the nostrils, and at the end, the intermediate space light greyish-blue. The iris orange-yellow. The feet leaden-grey, with the webs and claws black. The head and half of the neck all round are of a fine brownish-orange tint ; the lower part of the neck brownish-black, the terminal filaments of its anterior part stiffish, glossy, and greyish-white ; the hind part of the back

and upper tail-coverts brownish-black ; the tail greyish-brown. The rest of the upper parts are minutely undulated with dark-grey lines on a greyish-white ground. The primary quills are brownish-grey, tipped with dusky-brown ; the secondaries ash-grey, terminally edged with white, but the inner like the back ; the coverts grey, obscurely dotted and undulated with whitish. The breast is pale grey, its hind part and sides undulated like the back, but more obscurely ; on the abdomen, which is also undulated, greyish-brown prevails, and the feathers under the tail are blackish-brown. The axillars are white, the lower wing-coverts greyish-white.

Length to end of tail 18 inches ; extent of wings $25\frac{1}{2}$; bill along the ridge 2, from frontal angles $2\frac{4}{12}$, along the edge of lower mandible 2, its breadth $\frac{8}{12}$; wing from flexure $8\frac{1}{4}$; tail $2\frac{7}{12}$; tarsus $1\frac{5}{12}$; first toe $\frac{7}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{11}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{1}{2}$, its claw $\frac{5}{12}$; fourth toe $2\frac{7}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female, which is considerably less than the male, has the bill, eyes, and feet similarly coloured, but with the blue band on the bill narrower. The head and hind part of the neck are reddish-brown, the fore part of the cheeks, a space beneath and behind the eye, and the throat paler ; the lower part of the neck all round, with a portion of the breast greyish-brown, the feathers terminally edged with brownish-white. The upper parts of the body are dull greyish-brown, the fore part of the back and the scapulars slightly undulated with whitish ; the wings as in the male, but tinged with brown, and without dots ; the tail greyish-brown. The middle of the breast is greyish-white, the flanks dusky, the hind part of the abdomen greyish-brown ; the lower wing-coverts pale grey ; those in the middle and the scapulars white.

Length to end of tail 17 inches ; extent of wings 24 ; bill along the ridge 2 ; wing from flexure 8 ; tail $2\frac{1}{2}$; tarsus $1\frac{5}{12}$; middle toe $2\frac{4}{12}$, its claw $\frac{5}{12}$.

VARIATIONS.—Adult males vary considerably in size ; the red of the head and neck varies in tint ; the lower neck and

fore part of the breast may be brownish-black, or greyish-black, and sometimes the latter is deep grey. The white of the back, and its dark lines, vary in intensity, as is equally the case with the lower parts. Otherwise I have not seen any remarkable differences.

HABITS.—The Red-headed Pochards arrive on our coasts in the end of October, some betaking themselves to marshes and pools, others remaining in the bays and estuaries. They are, however, not common in the firths of Scotland, or in any part of that country; but on the eastern coasts of England, south of the Humber, they are still plentiful, although, owing to the draining of the fens, they are much less numerous now than formerly. This species feeds chiefly on the rhizomata of grasses, their leaves, and other vegetable substances, but also on *Zostera marina*, other salt-water plants, worms, and mollusca. The individual described above as representing the adult male had its stomach and œsophagus filled with fragments of slender plants resembling the subterranean parts of grasses. In the stomach was a large quantity of fragments of quartz, varying from the smallest size to three-twelfths in diameter, all white, and generally highly polished, together with some earth.

It swims strongly, sitting rather deep in the water, and dives habitually for its food. Its flight is rapid, and generally low; but farther I cannot speak respecting it, unless by borrowing from other observers. It also occurs in America; at least the specimens from that country which I have examined differed only in being considerably larger. Dr. Richardson states that it breeds in all parts of the fur countries, from the fiftieth parallel to their most northern limits, and Mr. Audubon describes it as very abundant during winter about New Orleans, in East Florida, and in Chesapeake Bay:—"Although they dive much, and to a great depth, while in our bays and estuaries, yet, when in the shallow ponds of the interior, they are seen dabbling the mud along the shores much in the manner of the Mallard; and on occasionally shooting them there, I have found their stomach crammed with young tadpoles and small water-lizzards, as well as blades of the grasses

growing around the banks. Nay, on several occasions, I have found pretty large acorns and beech-nuts in their throats, as well as snails, entire or broken, and fragments of the shells of various small unios, together with much gravel."

When caught, it soon becomes reconciled to confinement, and readily feeds on grain and other vegetable substances. Its flesh is moderately good, probably not inferior to that of the Canvas-back, which very closely resembles it in colour, but is of still more marine habits during the cold season.

This species has been found breeding at Scoulton-mere in Norfolk, but not elsewhere in any part of Britain. Mr. Hewitson states that a few remain to breed in Holland. In more northern European countries, however, it has not, apparently, been traced to its haunts; but its appearance in Britain in the end of autumn, its remaining there all winter, and its departing in spring, indicate its northward migration at the latter season, notwithstanding its occurrence in northern Africa, Egypt, and India. In Orkney, "flocks often appear in September, and usually remain till the end of March. They abound on the Loch of Skaill, and various other sheets of fresh water. In 1831, one was shot in Sanday so late as the 28th of June; it seemed, however, to be a solitary bird."—*Nat. Hist. of Orkney*, p. 79. It also occurs in Shetland as a winter visitant, but is not known to breed there. In Ireland it "is a regular winter visitant, but varies much in numbers in different years." M. Temminck says it is rather abundant in Russia, Denmark, and even the north of Germany. All that is stated as to its breeding is, that it nestles in marshy places, and lays ten or twelve greenish-white or yellowish-white eggs, about two inches in length.

YOUNG.—The young males, when fledged, resemble the female.

PROGRESS TOWARD MATURITY.—According to M. Temminck, the young males of one or two years have the red of the head and neck less bright; the black of the breast generally brownish, often even tinted with pale brown; and the back and sides sometimes marked with spots.

AYTHYA RUFINA. THE RED-CRESTED POCHARD.

Anas rufina. Gmel. Syst. Nat. I. 541.

Anas rufina. Lath. Ind. Ornith. II. 870.

Anas rufina. Temm. Man. d'Ornith. II. 864.

Fuligula rufina. Selby, Illustr. Brit. Ornith. II. 350.

Fuligula rufina. Jen. Brit. Vert. Anim. 240.

Callichen rufinus. Bonap. Comp. List. 58.

Male twenty-two inches long, with the bill rather narrow, two inches and two-twelfths long, vermilion, as are the feet; feathers of the upper part of the head and nape elongated; head and upper neck brownish-red; lower part of neck, breast, and abdomen blackish-brown; back, wings, and tail light brown; sides of the body, outer secondary quills, anterior edge of the wing, and an oblong spot on each shoulder white. Female with the bill bright red; the upper part of the head and nape deep brown; the throat, cheeks, and sides of the neck greyish-white; upper parts brown, lower brownish-white; lower fore-neck and sides mottled with brown.

MALE.—This species, considerably larger than the last, is remarkable for its tufted crest, and, although nearly of the same form and proportions, seems to present some affinity to the Mergansers, in having the bill more slender, with the lamellæ of the upper mandible projecting a little, and the unguis more decurved. The tarsi are very short and compressed; the outer two toes nearly equal, and about twice the length of the tarsus. The wings are pointed, with the outer quills longest; the tail short and rounded.

The bill and feet are vermilion; the interdigital membranes dusky. The head and upper fourth of the neck all round are brownish-red; the rest of the neck, the breast, abdomen, hind part of the back, and upper and lower tail-

coverts blackish-brown; the sides of the body white, partly undulated with dusky lines. An oblong spot on the sides of the back anteriorly, the margin of the wing at the carpal joint, and the outer webs of the secondary quills white; the primary quills and tail-feathers greyish-brown.

Length to end of tail 22 inches; bill along the ridge $2\frac{2}{12}$; wing from flexure $10\frac{1}{2}$; tarsus $1\frac{8}{12}$; middle toe $2\frac{9}{12}$, its claw $\frac{5}{12}$.

FEMALE.—According to M. Temminck, “the female has the top of the head, the occiput, and the nape deep brown; the crest less tufted; the cheeks, throat, and sides of the neck greyish-brown; the breast and sides yellowish-brown; the breast and abdomen grey; the back, wings, and tail brown, slightly tinged with ochre-yellow. There is no white spot on the sides of the back; the speculum is one half greyish-white, the other light brown; the base of the quills white, shaded with brown. The bill, tarsi, and toes reddish-brown.”

HABITS.—The Red-crested Pochard is said to inhabit the eastern parts of the north of Europe; to be found in Austria, Hungary, Turkey, the countries about the Caspian Sea, Switzerland, Provence, Genoa, Italy, Northern Africa, and India. Its range of migration does not ordinarily extend so far westward as Britain; and it had not been recorded as occurring there until Mr. Yarrell noticed it in the second volume of the Zoological Journal, p. 492, as an occasional visitant, a male having been shot near Boston, while feeding on fresh water along with some Wigeons. A few other individuals have been obtained. Several occurred the same winter in the London markets. One was subsequently killed at Yarmouth, and a female, out of a flock of eighteen, on the Thames.

REMARKS.—The above account is entirely compiled, chiefly from Yarrell and Temminck, the bird never having come under my notice, unless in Museums, and there being no specimen in my collection.

FULIGULA. SCAUP-DUCK.

THE Scaup-Ducks, of which *Fuligula Marila*, *F. ruftorques*, and *F. cristata* may be considered as the most characteristic species, differ from the Pochards chiefly in having the body shorter, the bill much broader, and less elongated, and the membrane of the hind toe wider. They may be described as having the body very large, short, full, and depressed; the neck moderate or rather short; the head rather large, oblong, compressed, and rounded above.

Bill nearly as long as the head, about the same height and breadth at the base, becoming depressed, and enlarging in breadth to the end, which is very broad and semicircular; the upper mandible with the basal lateral sinuses very short and wide, the upper sinus short, the frontal angles obtuse and little extended, the dorsal line gently declinate for half its length, then nearly direct to the unguis, which is small, obovato-oblong, flattened, and decurved, the ridge broad and flat at the base, gradually narrowed, convex toward the end, the sides at the base rapidly sloping, toward the end gradually more spreading and convex, the edges soft, marginate, concealing the ends of the numerous little elevated lamellæ; the nasal sinus small, sub-elliptical, sub-basal; lower mandible with the intercrural space long and rather wide, the crura slender, with their lower outline nearly straight, the outer lamellæ small, the unguis obovate, rather small, and nearly flat.

Mouth of moderate width; anterior part of palate broadly concave, with a median prominent line, on which are a few tubercles; the lateral lamellæ slender, little elevated; those of the lower mandible about double the number. Tongue fleshy, with a deep median groove, papillate at the base, lamelloso-filamentous on the margins, with the tip thin and

somewhat semicircular. Œsophagus rather wide ; proventriculus oblong. Stomach a very muscular gizzard, of a transversely elliptical form, placed obliquely, with longitudinally rugous epithelium, forming thick, somewhat concave circular grinding plates. Intestine very long and wide ; cæca long, of moderate width ; rectum very short.

Nostrils small, in the lower and fore part of the nasal sinus ; eyes small ; ears very small. Legs very short, placed rather far behind ; tarsus compressed, with small anterior scutella ; hind toe very slender, with a broad membrane ; outer toes about equal, and double the length of the tarsus ; interdigital membranes emarginate ; claws small, slender, little arched, rather pointed.

Plumage dense, firm, glossy ; feathers of the head and neck very soft, blended, silky, or velvety ; of the other parts moderate, ovate, wings short, convex, narrow, pointed, of twenty-six quills ; primaries narrow, the first longest. Tail very small, much rounded or cuneate, of fourteen stiffish, tapering feathers.

Black, white, and grey are the prevailing colours of the plumage. The females have the colours less decided, brown being generally substituted for black, and the markings larger. The young resemble the females. The birds of this genus, from the shortness of their legs, and the great size of their anterior toes, walk with difficulty, but swim and dive with ease. They are essentially marine in the winter season, although even then they not unfrequently betake themselves to fresh water. They feed on vegetable substances, shell-fish, crustacea, insects, and larvæ. In summer, when they resort to the arctic marshes, they reside chiefly in fresh water. Their flight is strong, direct, and quick. According to the kind of food principally used, and which they procure chiefly by diving, their flesh varies in flavour, but is generally good, being, although dark-coloured, savoury, and highly flavoured, but rather difficult to be digested.

FULIGULA NYROCA. THE FERRUGINOUS SCAUP-DUCK.

FERRUGINOUS DUCK. RED DUCK. CASTANEOUS DUCK. WHITE-EYED DUCK.
NYROCA DUCK. AFRICAN TEAL. NYROCA POCHARD.

Anas Nyroca. Gmel. Syst. Nat. I. 542.

Anas Nyroca. Lath. Ind. Orn. II. 869.

Anas leucophthalmos. Bechst. Naturg. Deut. IV. 1009.

Anas leucophthalmos. Temm. Man. d'Ornith. II. 876.

Nyroca leucophthalmos. Flem. Brit. Anim. 121.

Fuligula Nyroca. Selb. Illustr. Brit. Ornith. II. 354.

Fuligula Nyroca. Nyroca Pochard. Jen. Brit. Vert. An. 242.

Nyroca leucophthalma. Bonap. Comp. List, 58.

Male sixteen inches long, with the bill dusky-blue; the unguis black; the head, neck, fore part of breast, and sides chestnut-red; the neck with an obscure brown ring; upper parts blackish-brown, glossed with green; secondary quills white, with a terminal black band; lower parts white. Female with the head, neck, fore part of the breast, and sides reddish-brown; upper parts dusky, the feathers edged with paler; lower parts white; wings as in the male.

MALE.—The Ferruginous or White-eyed Pochard resembles the Common or Red-headed Pochard in general aspect; but is much smaller, and differently coloured. The bill is rather shorter than the head, higher than broad at the base, gradually depressed toward the tip, which is rounded, the unguis oblong and convex. The feet, wings, and tail are nearly as in the other species.

The bill is dusky-blue, with the unguis black; the feet bluish-black, the interdigital membranes darker. "The irides white." The head and neck all round, the fore part of the breast, and the sides chestnut-red; a white spot on

the chin, and a dusky ring about the middle of the neck. The back and wing-coverts dusky-brown, tinged with green. The primary quills brownish-black; the outer secondaries white, with a black bar at the end; the lower parts of the body white.

Length 16 inches; wing from flexure $7\frac{3}{4}$.

FEMALE.—According to Temminck, “the female has the head, neck, breast, and sides of the body brown, but all the feathers tipped with light reddish; there is no ring on the neck; the feathers of the upper parts are blackish, and terminated with pale brown; the other parts as in the male.

Length 15 inches.

HABITS.—This species, respecting the habits and distribution of which very little is known, is said to inhabit chiefly the eastern parts of Europe. India, Persia, Egypt, northern Africa, southern Europe, Russia, and Iceland are mentioned in connection with it. Temminck says it is a regular migrant in Germany, and appears accidentally, or in small numbers, in Holland, France, and England. In the latter country it is occasionally met with, and has been killed in Norfolk, Cambridgeshire, and Oxfordshire. Mr. Yarrell states that it is not unfrequently to be found in the London markets, the individuals there exposed being “generally received from the eastern counties between the Thames and the Humber.” I have not met with it in Scotland; but Sir William Jardine recollects having seen a fresh specimen in the Edinburgh market, and Messrs. Baikie and Heddle say it has been observed in Orkney, though very rarely.

M. Temminck states that it feeds on insects, small frogs, aquatic plants, and seeds, rarely on small fishes; nestles among the rushes that border the large rivers and marshes; and lays nine or ten eggs of a white colour, slightly tinged with greenish.

YOUNG.—The young, when fledged, according to Temminck, have the top of the head dusky-brown; all the feathers of the upper parts bordered and terminated with

reddish-brown ; the white of the belly tinged with light brown.

REMARKS.—The above account is entirely compiled, chiefly from Temminck and Yarrell. A female from India, in my collection, however, shows that the species, although somewhat allied to the Pochards in colouring, belongs to the genus *Fuligula*, its bill being shorter, and much broader than that of the *Aythæ*.

FULIGULA MARILA. THE BROAD-BILLED SCAUP-DUCK.

SCAUP DUCK. SPOON-BILL DUCK. WHITE-FACED DUCK.

Anas Marila. Linn. Syst. Nat. I. 196.

Anas Marila. Lath. Ind. Ornith. II. 853.

Scaup Duck. Mont. Ornith. Dict. and Suppl.

Canard Milouin. Anas Marila. Temm. Man. d'Orn. II. 865.

Scaup Pochard. Fuligula Marila. Selby, Illust. II. 354.

Fuligula Marila. Scaup Pochard. Jenyns, Brit. Vert. Anim. 243.

Fuligula Marila. Bonap. Comp. List, 58.

Male twenty inches long, with the bill broad, enlarged toward the end, two inches long, an inch and a twelfth in breadth, dull light greyish-blue, with the unguis blackish ; feathers of the head short ; the head and upper part of the neck greenish-black ; the rest of the neck, fore part of the back and breast, and hind part of the back, black ; the rest of the back and wing-coverts greyish-white, finely undulated with dusky ; the outer secondaries partly white ; the breast and sides white ; hind part of abdomen and lower tail-coverts dusky ; tail brownish-grey, of fourteen feathers. Female with the head, neck, and fore part of the back and breast, brown ; a broad band of white on the forehead ; upper parts blackish-brown, in part undulated with whitish ; middle of the breast white ; sides and hind parts dusky brown. Young nearly similar to the female.

MALE IN WINTER.—The Scaup Pochard, a little larger and more robust than the Tufted, is of the same form and proportions, having the body very full and considerably depressed, the neck of moderate length, the head large, oblong, compressed, and rounded above.

The bill is of the same length as the head, about the same

height and breadth at the base, becoming depressed and enlarging in breadth to the end, which is semicircular; the upper mandible with the basal sinuses nearly semicircular, the dorsal line declinate to beyond the nostrils, then direct to the unguis, which is small, obovate, decurved, the ridge broad and concave, gradually narrowed. and ultimately rounded, the sides at the base rapidly sloping, toward the end convex, the edges soft, concealing the ends of the oblique, little elevated lamellæ, of which there are forty-five; the nasal space small, elliptical, sub-basal; lower mandible flat, with the intercrural space very long, rather wide, bare, the crura slender, with their outline very nearly straight, the erect, inflected edges with about sixty outer and eighty-five inner lamellæ, the unguis obovato-triangular, nearly flat.

The mouth an inch in width; the palate concave; the posterior aperture of the nares linear-lanceolate, margined with numerous fine papillæ; the anterior part very broadly and deeply concave. The tongue is very large, fleshy, two inches long, with papillate flaps at the base, a prominent edged pad above, a deep medial groove, the upper surface smooth; the margin pectinato-lamellate, with five large tooth-like papillæ on each side toward the base; the tip thin-edged and semicircular.

The nostrils are small, three-twelfths long, situated at about a third of the length of the bill. The eyes very small, their aperture only two-twelfths and a half; the aperture of the ear only a twelfth and a quarter; the feet are very short, placed rather far behind; the tarsus very short, with twenty small scutella, and eight in the outer row; the hind toe very small, with eleven scutella; the second with twenty-five, the third with thirty-six, the fourth forty scutella; the hind toe with a small inferior membrane, the inner with an enlarged somewhat two-lobed membrane; the interdigital membranes somewhat emarginate. The claws small, slender, little arched, laterally grooved, rather obtuse, that of the middle toe little dilated.

The plumage is dense, soft, glossy, blended; the feathers of the head and upper-neck short and velvety; the wings short, narrow, concave, with twenty-six quills, and five

humeral; the primaries narrow, tapering, decurved, the first longest, the second scarcely shorter, the rest rapidly graduated; the secondaries tapering. The tail is very small, much rounded, of fourteen moderately firm rather pointed feathers, of which the medial are nine-twelfths longer than the lateral.

The bill is light greyish-blue, or dull lead-colour, with the unguis blackish. The iris rich yellow; the edges of the eyelids dusky. The feet pale greyish-blue, darker on the joints; the membranes dusky; the claws black. The head and upper half of the neck black, strongly glossed with green and purple; the rest of the neck and part of the back and breast black, toward the margin of which colour on the breast some of the feathers are terminally edged with greyish-white; the hind part of the back brownish-black; the tail greyish-brown. The middle of the back, the scapulars, and wing-coverts, white, transversely undulated with dusky lines, which are broader on the hind part of the scapulars, three of the larger of which, however, are dusky, glossed with green; the primary coverts blackish-brown; the primaries partly greyish-brown, but from the fourth primary to the tenth secondary is a broad white band, including the whole length of three quills except the tips; the inner secondaries and the ends of the rest blackish-green, the inner three dotted with white. The breast and sides are white; the abdominal region anteriorly greyish-white, undulated with dusky brown, that colour increasing, so that the feathers under the tail are brownish-black; the axillars and middle lower wing-coverts white, the rest grey or dotted with that colour.

Length to end of tail 20 inches; extent of wings 32; bill along the ridge 2; from the frontal angle $2\frac{4}{12}$; along the edge of lower mandible $2\frac{2}{12}$; its greatest breadth $1\frac{1}{12}$; wing from flexure 9; tail $2\frac{3}{4}$; tarsus $1\frac{5}{12}$; first toe $\frac{8}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{5}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{6}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female has the bill coloured as in the male, but darker; the feet dull leaden-grey, with the webs dusky; the head, neck, and fore part of the back and breast, are brown, darker on the head, tinged with red on the fore-neck.

The upper parts are brownish-black, the greater part of the back, scapulars, and wing-coverts finely undulated with white; the wings and tail as in the male; the middle of the breast white; the sides undulated and broadly patched or banded with brown; the hind parts undulated with brown and white; the axillars white; the lower wing-coverts as in the male. A broad band of white on the forehead, becoming narrow along the basal margin of the lower mandible.

Length to end of tail 18 inches; extent of wings 28; bill $1\frac{1}{2}$; wing $8\frac{3}{4}$; tail $2\frac{1}{2}$; tarsus $1\frac{4}{12}$; middle toe $2\frac{4}{12}$, its claw $\frac{6}{12}$.

HABITS.—The Scaup Pochard arrives on our coasts in the end of October, and continues to increase until the middle of winter. In the estuaries, and along the flat shores, it is met with plentifully, often in very large flocks. It is very rarely met with in fresh water, its food consisting chiefly of marine testaceous mollusca, for which it dives, like the Scoters, often mingling with them and other species. Its flight is moderately quick, usually performed at no great height above the water, on which it alights abruptly on its hind part. Although it rises without difficulty, it usually prefers diving to escape pursuit; and so expert is it in this act, that it is very difficult to shoot it on the water. It swims strongly, sitting rather deep, and on diving remains long before it emerges. Being generally abundant during winter and spring, it is common in the markets, but is not much esteemed as an article of food, its flesh being rather rank. Montagu states that both the male and the female have a habit of tossing up their heads and opening their bills, which in spring is continued for a considerable time while they are swimming and sporting on the water, and they emit a grunting sort of cry. At high water it is seen resting in flocks at some distance from the shores, which it approaches when the tide recedes. In the end of March and beginning of April they disappear from our coasts, and are said to resort to the northern parts of Europe, where they rear their young. The species occurs equally in North America, frequenting in winter the large rivers, as well as the bays, and feeding partly on vegetable substances. When kept in confinement it readily eats grain.

“During the summer months,” says Montagu, “when the larvæ of various insects are to be found in the mud at the bottom of the pond, these birds are continually diving; but they are perfectly contented with barley, and are become so tame as to come to the edge of the water for a bit of bread. Of all the aquatic birds we have had, that have been taken alive from their natural wild habits, none have appeared so familiar as the Scaup; and after feeding a few days with bread soaked in water, they take to eating barley freely.”

VARIATIONS.—Great differences are observed in the size of individuals of both sexes; but the colours of the males vary little, some, however, having much more white on the back than others.

YOUNG.—When fledged, the young nearly resemble the female. The male has the upper part of the head and neck dark brown, the fore part of the neck above variegated with brown and greyish-white; a band of white, mottled with brownish-black on the fore part of the head; the upper parts dull brown, undulated with greyish-white; the wings and tail as in the adult; the lower fore-neck and part of the breast dark brown, lunulated with greyish-white, the stiffish terminal margins of the feathers being of the latter colour; the rest of the breast dull white; the sides, abdomen, and lower tail-coverts greyish-brown; the lower wing-coverts grey, but the axillars white. The females are similar, but with little of the greyish-white lines on the upper parts.

REMARKS.—The description of the male is from a fine specimen obtained in Edinburgh, in the beginning of January, 1841. Some reference requires to be made here to the American *Fuligula mariloides*. A bird purchased several years ago in Leadenhall Market has been considered by Mr. Yarrell and Mr. Henry Doubleday as of this so-called species, the distinctness of which from the common Scaup-Duck is, however, extremely doubtful. Young individuals of that species that I have examined differ in no respects from the one described and figured by Mr. Yarrell.

FULIGULA CRISTATA. THE TUFTED SCAUP-DUCK.

TUFTED DUCK. BLACK DUCK. BLACK WIGEON.

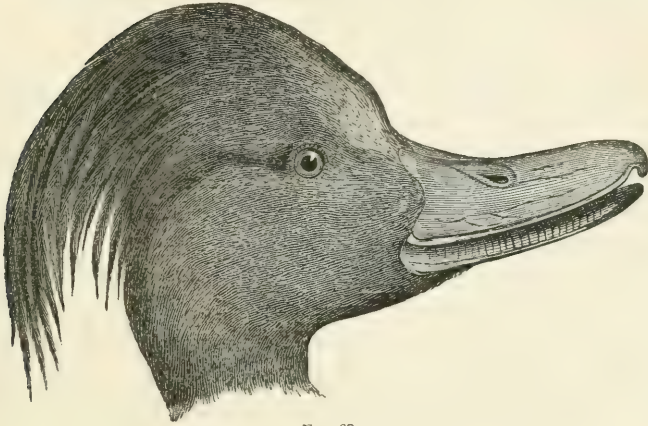


FIG. 68.

Anas Fuligula. Linn. Syst. Nat. I. 543.

Anas Fuligula. Lath. Ind. Ornith. II. 869.

Tufted Duck. Mont. Ornith. Dict. and Suppl.

Canard Morillon. *Anas Fuligula.* Temm. Man. d'Ornith. II. 873.

Tufted Pochard. *Fuligula cristata.* Selby, Illustr. II. 357.

Fuligula cristata. Tufted Pochard. Jenyns. Brit. Vert. Anim. 244.

Fuligula cristata. Bonap. Comp. List, 58.

Male seventeen inches long, with the bill broad, enlarged toward the end, an inch and eight-twelfths long, eleven-twelfths and a half in breadth, leaden grey, with a terminal black band including the unguis; feathers of the head elongated into a large decurved crest; the head and upper part of the neck purplish-black; the upper parts black, obscurely and minutely dotted with white; a white band from the fourth primary to

the tenth secondary, the tips black; the breast and sides white; hind part of abdomen and lower tail-coverts dusky; tail greyish-black, of fourteen feathers; iris bright yellow. Female much smaller, with the crest shorter; the head and upper neck brownish-black; the upper parts blackish-brown, more faintly dotted with whitish; the breast white, the sides and lower fore-neck dusky brown, the feathers edged with whitish; hind part of abdomen and lower tail-coverts dusky, variegated with whitish; iris pale yellow. Young similar to the female, but with the bill and feet darker, the plumage more brown; a white patch on each side before the eye, and a triangular whitish patch on the chin.

MALE IN WINTER.—This species, easily distinguished by its large decurved crest, dusky upper plumage, and white, black-edged wing-band, is of a remarkably short and compact form, having the body broadly elliptical, depressed, and plump; the neck of moderate length; the head rather large, oblong, compressed, and rounded above.

The bill is a little shorter than the head, about the same height and breadth at the base, becoming depressed and enlarging in breadth to the end, which is rounded; the upper mandible with the basal sinuses short and angular, the dorsal line declinate, a little recurved, the ridge broad and flat, gradually narrowed and becoming convex, the side at the base rapidly sloping, toward the end convex, the tip semicircular, with the unguis small, obovate, decurved; the edges soft, marginate, with a deep linear groove, and concealing the scarcely elevated outer ends of the nearly direct, recurved, little elevated lamellæ, of which there are about forty; a curved groove on each side of the tip; the nasal space small, elliptical, sub-basal; the lower mandible flat, with the intercrural space very long, rather narrow, bare, the crura slender, with their lower outline very slightly convex, the sides with about thirty-five outer and sixty inner lamellæ, the unguis obovato-triangular.

The mouth is of moderate width. The tongue fleshy, deeply grooved above, an inch and a half in length, with a deep medial groove, its sides with two series of bristly fila-

ments, the tip thin, horny, and rounded. The œsophagus is nine inches long, of moderate width; the proventriculus nine-twelfths in breadth, its glandules cylindrical. The stomach is a very powerful gizzard, of an elliptical form, compressed, and situated obliquely; its greatest diameter two inches and a quarter; the lateral muscles an inch thick; the epithelium dense, slightly rugous, with two circular grinding surfaces. The intestine is seven feet three inches long; its width four-twelfths for about a foot, then to the cœca averaging five-twelfths. The cœca are seven inches long, and come off at the distance of four inches from the end. The rectum is four-twelfths in width.

The nostrils are small, two-twelfths long, situated at about a third of the length of the bill; the eyes small, as is the aperture of the ear. The feet are very short, and placed rather far behind; the tarsus very short, compressed, with seventeen anterior small scutella, eight outer scutella, the rest covered with angular scales. The hind toe very small, with twelve double scales; the second with twenty-five scutella, the third with thirty-four, the fourth with forty-eight; the outer toes about equal, the inner with a two-lobed margin; the hind toe with a small inferior membrane; the interdigital membranes emarginate. The claws are small, very slender, slightly arched, rather acute, the inner edge of the third little expanded.

The plumage is dense, firm, soft, glossy, and blended; the feathers of the head and upper part of the neck short and velvety; those on the top of the head elongated, linear, decurved, forming a large longitudinal crest, of which the longest feathers measure three inches. The wings are short, narrow, concave, and pointed, with twenty-six quills; the primaries narrow, tapering, the first longest, the second scarcely shorter, the rest rapidly graduated; the secondary quills incurved, short, broad, obliquely rounded, the inner elongated and tapering. The tail is very small, much rounded, of fourteen stiffish, pointed feathers.

The bill is of a light greyish-blue colour, with the unguis black. The iris bright yellow. The feet bluish-grey, the webs dusky, the claws black. The head and upper

part of the neck are black, with green and purple reflections. The general colour is brownish-black; the feathers of the fore part of the back and the scapulars sprinkled with minute white dots. Toward the margin of the black on the fore part of the breast, the feathers are terminally margined with greyish-white. The breast and sides are white; the abdominal region anteriorly greyish-white, mottled with dusky in undulating lines, its hind part and the lower tail-coverts brownish-black. The axillars and lower wing-coverts are white, those toward the margin brownish-grey. There is a white band on the wing, from the fourth primary to the tenth secondary; the inner secondaries and the tips of the rest black, glossed with green.

Length to end of tail 17 inches; extent of wings 30; bill along the ridge $1\frac{8}{12}$, from frontal angles 2, along the edge of lower mandible $1\frac{11}{12}$, its greatest breadth $\frac{11}{12}$; wing from flexure $8\frac{1}{4}$; tail $2\frac{1}{2}$; tarsus $1\frac{2}{12}$; first toe $\frac{7}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{7}{12}$; its claw $\frac{4}{12}$; third toe $2\frac{1}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{2}{12}$, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female, which is much smaller, has the bill and feet of a somewhat darker tint, the iris yellow; the crest smaller, and with the rest of the head and the upper part of the neck blackish-brown; the lower fore neck dusky, the feathers edged with brown; the back and wings brownish-black, faintly dotted with whitish-brown; the white band on the wings as in the male; the breast white, the sides patched with brown; the abdominal feathers and those under the tail dusky tipped with whitish.

Length to end of tail 15 inches; extent of wings 28; bill along the ridge $1\frac{8}{12}$; tarsus $1\frac{1}{12}$; middle toe 2, its claw $\frac{4}{12}$.

VARIATIONS.—Considerable differences in size, and in the tints of the plumage occur.

HABITS.—The Tufted Pochard arrives in October, and departs in April. It is generally dispersed over the country, frequenting lakes, pools, marshes, and the still parts of rivers, where it feeds chiefly on insects, testaceous mollusca, and

worms, in quest of which it dives. It very seldom appears in flocks of large size, from two to six or eight individuals being more commonly met with. Like the other species of this genus, it has a rapid, direct flight, swims with rapidity, dives most expertly, and is with difficulty shot on the water. It rises with ease on wing, alights abruptly, and in its habits resembles the Golden-eyed Garrot. When the fresh waters are frozen, it betakes itself to the sea, like all the other species, and subsists chiefly on bivalve mollusca. Even during open weather it is often seen in the shallow bays, and especially in estuaries. Montagu states that it is often "shot on Slapton Ley, in South Devon, a large piece of water close to the sea, and is by the natives called Black Wigeon." From thence northward on both sides of the island it is not uncommon, until beyond the Firths of Clyde and Tay, when it becomes of less frequent occurrence. In Ireland it "is a regular winter visitant." Although its flesh is good, it is not in much request as an article of food, but it is not uncommon in the markets. It retires to the arctic regions to breed, although some, according to M. Temminck, remain in the temperate climates. In winter it is dispersed over the western and southern parts of Europe; but it is not met with at any season in America.

YOUNG.—In their first plumage, according to M. Temminck, the young have no appearance of a crest. "There is a large whitish spot on the sides of the bill (on the sides of the head close to the base of the bill); white on the forehead and sometimes behind the eyes; the head, neck, and breast dull brown, varied on the breast with reddish-brown; the feathers of the back and wings blackish-brown, margined with lighter brown; the flanks of a reddish-brown; the band on the wing small and whitish; the abdomen variegated with grey and brown; the iris pale yellow. The young males have the breast of a purer white than the young females."

YOUNG IN WINTER.—The following description is from a young bird shot by my son on Duddingston Loch, on the 18th February, 1841. The bill light greyish-blue, with a

black band at the tip including the unguis ; the feet paleish-grey, with the webs dusky ; the iris brownish-white. There is a small longitudinal crest of linear decurved feathers, some of which are an inch and two-twelfths long. The plumage is firm, and on the lower parts highly glossed. The head and part of the neck are brownish-black ; there is a white patch dotted with black on each side margining the upper mandible, and a very small triangular spot on the feathered portion of the intercrural space, the feathers behind it light brown. On the lower fore-neck the feathers are dusky, edged with light brown, the lower with white ; those on the sides before the wing greyish-brown ; the breast white ; the sides and abdomen dusky grey variegated with white ; the hind part of the sides light greyish-brown, partially dotted with whitish ; the lower wing-coverts white, except the marginal, which are dusky-grey. The upper parts are brownish-black, the smaller wing-coverts brown, minutely dotted with whitish. The white band on the wing is the same as in the adult, and the tail is dusky-brown.

Length $15\frac{1}{2}$ inches ; extent of wings 27 ; bill along the ridge $1\frac{7}{12}$, along the edge $1\frac{1}{2}$; tarsus $1\frac{1}{4}$; middle toe 2, its claw $\frac{1}{4}$.

In this state it might be mistaken for *Fuligula leucophthalmos*, as defined by M. Temminck. "Bill long ; iris white ; wing-spot white tipped with black ; a white spot under the bill," all which characters agree with it, excepting the first.

OIDEA. SCOTER.

THE Scoters, which are remarkable for their black colour and tumid bill, are birds of large size, having the body very full, much depressed; the neck of moderate length, or rather short and thick; the head large, oblong, compressed, and rather flattened above.

Bill nearly of the same length as the head, very broad, of about equal height and breadth at the base, depressed and flattened toward the end, which is rounded; upper mandible with a prominence at the base above, and a more extended enlargement on each side, the dorsal line at first convex, before the nostrils concave, the unguis very large, broadly elliptical, little convex, at the end decurved, the sides erect at the base, gradually more convex toward the end, the edges thin, concealing the not very numerous slender lamellæ; lower mandible flattened, with the intercrural space very long, rather narrow, bare for more than half its length, the lower outline of the crura slightly convex, the unguis very large, and broadly elliptical; the gape-line gently rearcuate.

Mouth of moderate width; anterior palate broadly concave, with a median prominent line, on which are some tubercles, and from thirty to forty marginal lamellæ. Tongue large, fleshy, with numerous conical papillæ at the base, a deep median groove, two lateral series of bristles, and a thin rounded tip. Œsophagus wide. Stomach a powerful gizzard of a roundish form, with very large lateral muscles, longitudinally rugous epithelium, and thick grinding plates. Intestine of moderate length, wide; cæca rather long, and narrowed.

The trachea is remarkable for two abrupt bony expansions, one at the upper larynx, the other roundish and flattened. The lower larynx is large, but symmetrical; the bronchi wide, and of moderate length.

Nostrils elliptical, large, sub-basal, Eyes rather small. Aperture of ear small. Legs very short, and placed rather far behind ; tarsus very short, compressed, with small scutella. Hind toe small, slender, with a pretty large membrane, connected at the base with the bilobate marginal membrane of the inner toe ; anterior toes long, the third nearly double the length of the tarsus ; all scutellate ; interdigital membranes full. Claws small, slightly arcuate, compressed, obtuse ; that of the middle toe with the inner edge dilated.

Plumage full, dense, and soft ; on the head and neck blended and velvety ; the feathers on the other parts ovato-oblong, rounded, dense, glossy. Wings rather short, convex, narrow, pointed ; primaries acuminate, the first and second longest ; inner secondaries oblong. Tail very short, narrow, much rounded, or tapering, of fourteen or sixteen stiffish, narrow, obtusely pointed feathers.

The Scoters inhabit the open sea or estuaries during the greater part of the year, feeding chiefly on bivalve shell-fish, for which they dive in shallow or moderately deep water. In summer they betake themselves to the arctic regions, where they nestle on the shores of the sea, lakes, or marshes, forming a bulky nest, lined with down, and laying numerous white eggs. Their flight is moderately rapid, direct, and performed by quick beats. They swim and dive with ease, remain long under the water, are gregarious unless in the breeding season, and even then the males, which have left the females, keep together in flocks. The males have the plumage chiefly black, the bill and feet red ; but the females are brown, and are destitute of the enlargements at the base of the bill so remarkable in the males. Four species are known to me, of which three occur in Britain.

The name ought to be *Ædemia*, in correspondence with *Ædicnemus*, *Ædipus*, and words of like derivation.

OIDEMIA PERSPICILLATA. THE SURF SCOTER.

BLACK DUCK. SURF DUCK. GREAT-BILLED SCOTER.

Anas perspicillata. Linn. Sys. Nat. I. 201.

Anas perspicillata. Lath. Ind. Ornith. II. 847.

Canard Marchand. *Anas perspicillata.* Temm. Man. d'Ornith. II. 853.

Surf Scoter. *Oidemia perspicillata.* Selby, Illustr. II. 335.

Oidemia perspicillata. Surf Scoter. Jen. Brit. Vert. Anim. 240.

Oidemia perspicillata. Bonap. Comp. List. 57.

Male with the bill having a gently sloping protuberance in front, the very large lateral prominences bare, the upper mandible with a nearly square black patch on each side at the base, margined with orange, unless anteriorly, where there is a bluish-white patch, the prominent part over the nostrils reddish-orange, paler at the margins, the sides toward the end red, the unguis greyish-yellow; the lower mandible flesh-coloured, with the unguis darker; tarsi and toes orange-red, webs dusky; plumage deep black glossed with blue; a patch of white on the top of the head, and another on the hind neck; tail of fourteen feathers. Female with the bill greenish-black, its basal prominences less elevated; the feet yellowish-orange; the plumage brownish-black, darker on the top of the head and upper parts of the body. Young like the female.

MALE IN WINTER.—This species, which in winter is abundant on the eastern coasts of North America, and in summer extends from Labrador northward, having in a few instances been met with on the coast of Scotland, claims our regard as a British bird. My descriptions, however, are taken from American specimens. The male, which is considerably larger than the female, has the bill nearly as long as the head, of about the same height and breadth at the base,

depressed toward the end, where it is narrower, but rounded. The upper mandible has a protuberance above, with a convex and descending outline; the sides at the base are erect, bulging, of great breadth, bare, and extending far back toward the eye; the unguis very large, obovato-triangular, convex, decurved and rounded, the edges thin, soft, marginate, somewhat rearcuate; the lower mandible with the intercrural space, long, rather narrow, and bare, the lower outline of the crura slightly convex, the unguis very large.

The mouth is of moderate width; the anterior palate concave, with a soft median ridge, on which are about ten short conical papillæ, and on each side about thirty-five slender lamellæ, of which the ends are not protruded. The tongue is an inch and three-fourths in length, thick, fleshy, with numerous conical papillæ at the base, a deep median groove, two lateral series of bristles, and a terminal, thin, rounded lobe. The œsophagus is eight inches and a half in length, from an inch to three-twelfths more in width; the proventricular belt of cylindrical glandules an inch and a half in breadth. The stomach is large, roundish, an inch and ten-twelfths in length and breadth, with very strong lateral muscles, and dense rugous epithelium forming two roundish grinding plates. The intestine is sixty-seven inches long, and half an inch wide; the cœca about four inches in length, and two-twelfths and a half in width; their distance from the extremity seven inches and a half.

The trachea of the male, seven inches and a half in length, presents at the upper part a large bony expansion, seven-twelfths of an inch in length, and eight-twelfths in breadth. Beyond this part its width is five-twelfths, gradually diminishes to three-twelfths about the middle, then enlarges to five-twelfths; after which it presents a second enlargement, nine-twelfths in length, an inch and two-twelfths in breadth, convex anteriorly, slightly concave behind. The trachea then contracts to four-twelfths, and presently expands to form the lower larynx, which is large and osseous, but symmetrical. The bronchi are large, of twenty-five cartilaginous half-rings. The rings of the trachea are firm and osseous, nine at the upper part, then the first bony expan-

sion, then seventy-eight rings, followed by the lower expansion, which is formed of about twelve united rings, and at the lower part six distinct and ten united rings.

The nostrils are elliptical, large, submedial, near the ridge. The eyes rather small. The feet very short; the tarsus compressed, with small anterior scutella. The hind toe is small, with a lobiform membrane; the outer toes nearly equal, and almost double the length of the tarsus; the interdigital membranes full. The claw of the hind toe is very small and curved, that of the middle toe with the inner edge dilated, those of the rest slender, little arched, compressed, rather obtuse.

The plumage is soft, dense, and glossy; the feathers of the head and neck blended and velvety. The wings are rather short, narrow, and pointed; the primary quills curved, strong, tapering, pointed; the first longest, the secondaries broad and rounded, the inner elongated and tapering. The tail is very short, narrow, cuneate, of fourteen stiff, pointed feathers.

The upper mandible is orange-red, with the unguis yellowish-grey, and on the protuberance of each side at the base a large square patch of black, margined with orange-red, unless in front, where there is a patch of greyish-white; the lower mandible flesh-coloured, with the unguis darker. The iris yellowish-white. The tarsi and toes are orange-red; the webs dusky; the claws black. The plumage is deep black, glossed with blue, of a lighter tint beneath. On the top of the head is a roundish patch of white, and on the hind-neck a larger, elongated patch of the same.

Length to end of tail 20 inches; wing from flexure $9\frac{5}{4}$; tail $3\frac{3}{4}$; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $2\frac{5}{12}$; tarsus $1\frac{7}{12}$; hind toe $\frac{8}{12}$, its claw $\frac{3}{12}$; middle toe and claw $2\frac{4}{12}$.

FEMALE.—The female has the base of the bill much less protuberant, its colour greenish-black; the iris yellowish-white; the feet yellowish-orange, with the webs dusky and the claws black. The general colour of the plumage is brownish-black, the lower parts being lighter.

Length to end of tail 19 inches ; wing from flexure $8\frac{3}{4}$; tarsus $1\frac{5}{8}$; middle toe and claw $2\frac{3}{4}$.

HABITS.—This species is described by Mr. Audubon as abundant in winter on the eastern coasts of America, extending as far southward as the mouths of the Mississippi. In Labrador he found a few in summer, and in a marsh came upon a female sitting on her eggs. “The nest was snugly placed amid the tall leaves of a bunch of grass, and raised fully four inches above its roots. It was entirely composed of withered and rotten weeds, the former being circularly arranged over the latter, producing a well-rounded cavity, six inches in diameter, by two and a half in depth. The borders of this inner cup were lined with the down of the bird, in the same manner as the Eider Duck’s nest, and in it lay five eggs, the smallest number I have ever found in any Duck’s nest. They were two inches and two and a half eighths in length, by one inch and five-eighths in their greatest breadth, more equally rounded at both ends than usual, the shell perfectly smooth, and of a uniform pale yellowish or cream-colour.” Its habits are represented as similar to those of the other species, its food consisting of shell-fish, for which it dives in shallow water, often even amidst the breakers, whence its name of Surf Duck. That of *perspicillata*, or spectacled, has reference to the two black, margined patches on the sides of its bill.

Mr. Gould states that he has received a female killed in the Firth of Forth ; and Mr. Bartlett had a recently killed specimen sent to him for preservation, from which Mr. Yarrell derived some particulars of his description of the species. This, I believe, is the only positive evidence of its occurrence in Britain ; for although Dr. Fleming and other British writers, as well as M. Temminck, speak of its being occasionally found among the Shetland and Orkney Islands, they do not specify instances. Messrs. Baikie and Heddle, however, state that in Orkney “Surf Scoters appear in small flocks in the sounds during winter.” “They generally arrive in October, and have been observed till the end of March.” Mr. Thompson has recorded the capture of one in Belfast

Bay. It has been met with in various parts of Europe, but is of rare occurrence there, its proper country, it appears, being America.

YOUNG.—According to Mr. Audubon, “in the young males, in the month of September, the whole upper plumage is mottled with darkish brown and greyish-white, the latter colour margining most of the feathers. The neck has a considerable extent of dull greyish-white, spread over two or three inches, and approaching toward the cheeks and throat.”

PROGRESS TOWARD MATURITY.—About the beginning of January, according to the same observer, “they become of a more uniform dark tint, the upper part of the head brownish-black, without any white spot. There is a patch of brownish-white at the base of the upper mandible on each side, another of an oblong form over the ear, and on the nape are elongated greyish-white marks. The bill and feet dusky green; the iris brown.”

OIDEMIA FUSCA. THE VELVET SCOTER.

VELVET DUCK. BLACK DUCK. WHITE-WINGED BLACK DUCK.
BLACK DIVER. DOUBLE SCOTER.

Anas fusca. Linn. Syst. Nat. I. 196.

Anas fusca. Lath. Ind. Orn. II. 848.

Velvet Duck. Mont. Orn. Dict.

Canard double macreuse. *Anas fusca.* Temm. Man. d'Orn. II. 854.

Velvet Scoter. *Oidemia fusca.* Selb. Illustr. II. 333.

Oidemia fusca. Velvet Scoter. Jen. Brit. Vert. An. 239.

Oidemia fusca. Bonap. Comp. List, 57.

Male with the bill protuberant, and sloping at the base above, the rounded lateral protuberances partially feathered, the base and margins of both mandibles black, the unguis of both red, the sides of the upper orange; inner side of the tarsus and toes orpiment orange, outer lake-red; plumage black, glossed with blue and green above; outer secondary quills, tips of their coverts, and a spot below the eye white; tail of fourteen feathers. Female with the bill dusky, its basal prominence less elevated; the feet coloured as in the male: the plumage sooty-brown, the breast and abdomen paler; outer secondaries and tips of their coverts white; two whitish spots on each side of the head. Young like the female.

MALE IN WINTER.—The Velvet Scoter, which is much larger than the other species, and at once distinguishable by the white band on its wings, has the body large and much depressed; the neck thick and of moderate length; the head large, oblong, compressed.

The bill is nearly of the same length as the head, as high as broad at the base, depressed and flattened toward the end, which is rounded; the upper mandible with a moderate protuberance at the base, its dorsal line rapidly sloping to beyond

the nostrils, then slightly concave, and at the end decurved, the ridge on the prominence very broad and flattened, towards the end broadly convex, the sides convex, the edges thin and obtuse, with about thirty lamellæ, the unguis very large and broadly elliptical; the lower mandible flattened, with the intercrural space very long, rather narrow, rounded anteriorly, bare for more than half its length, the crura slender, rearcuate, the dorsal line slightly convex, the edges with about twenty-five lamellæ, the unguis very large and broadly elliptical; the gape-line gently rearcuate.

Nostrils elliptical, very large, sub-basal, sub-vertical, pervious, their upper margin membranous, their length four-twelfths-and-a-quarter. The eyes are rather small. The legs are very short, and placed rather far behind; the tarsus very short, compressed, with small scutella in front, a partial series above the outer toe, the rest reticulated with small angular scales. The hind toe is small, slender, with a pretty large membrane, connected at the base with the marginal membrane of the inner toe, which is also pretty large, and formed into two lobes. The anterior toes are nearly double the length of the tarsus, the inner much shorter than the third and fourth, which are nearly equal; the outer with a thick margin; the interdigital membranes with their free margin concave; the first toe with about ten, the second with about forty, the other two about fifty scutella. The claws are small; that of the hind toe very small, arcuate, and compressed; of the second and fourth slender, slightly arcuate, compressed, obtuse, of the middle toe with the inner edge dilated.

The plumage is full, dense, and soft; on the head and neck blended and velvety; those on the fore part of the head extremely small; on the neck oblong; on the other parts ovato-oblong, rounded, dense, and glossy. The wings, which reach to two inches from the tip of the tail, are rather short, narrow, and pointed. The primaries of moderate breadth, acuminate, the first longest, the second scarcely two-twelfths of an inch shorter, the rest more rapidly decreasing; the secondaries broadly rounded, the inner oblong. The tail is very short, narrow, much rounded, or wedge-shaped, of four-

teen slightly arched, stiffish, narrow, tapering, obtusely-pointed feathers, of which the lateral are an inch and a half shorter than those in the middle.

The upper basal prominence of the bill, the nostrils, part of the lateral prominences, the margins of the upper mandible, and a streak on each side of the unguis black; the sides rich orange, the unguis and part of the ridge reddish flesh-colour; the basal half of the lower mandible black, the rest lake-red. The iris is greyish-white, with an external dusky ring. The inner side of the tarsus, of the hind toe and its web, as well as of the other toes, with the whole loose web of the inner orpiment orange; the outer side of the tarsus, hind toe and its web, as well as of the other toes, bluish-carmine or lake; the sole of the foot, and the webs above brownish-black; the claws black. The general colour of the plumage is brownish-black; the head and neck with violet reflections, the back with green and blue. A narrow oblong spot of white extends from the anterior angle of the eye to a quarter of an inch behind it. On the wing is a large patch of white, the greater part of the outer eleven secondaries, and the tips of their coverts being of that colour.

Length to end of tail 21 inches; extent of wings 37; wing from flexure $11\frac{1}{2}$; tail $3\frac{3}{4}$; bill along the ridge $1\frac{1}{2}$; along the edge of lower mandible $2\frac{8}{12}$; its greatest breadth $1\frac{2}{12}$; tarsus $1\frac{1}{2}$; hind toe $\frac{8}{12}$, its claw $\frac{3}{12}$; second toe $2\frac{1}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{1}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{1}{12}$, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female has the basal prominence of the bill much less elevated, and the plumage less glossy. The bill is entirely of a dusky colour; but the feet are coloured as in the male, though the tints are duller. The general colour of the plumage is brownish-black, the lower parts lighter. Near the base of the upper mandible on each side is a greyish-white spot, and behind the eye another. Outer secondaries white as in the male.

Length to end of tail 21 inches; extent of wings 36; wing from flexure 11; tail $3\frac{1}{2}$; tarsus $1\frac{1}{12}$; middle toe $2\frac{1}{12}$, its claw $\frac{4}{12}$; bill along the ridge $1\frac{1}{12}$.

VARIATIONS.—Individuals vary considerably in size. Males vary in the degree of prominence of the basal parts of the bill, and in its colour, some wanting the two dusky streaks at the side of the unguis. The feathers also encroach on the lateral prominence to a variable extent. The plumage is sometimes more tinged with brown as above described. The females also differ in size, and somewhat in the tints of their plumage and feet.

HABITS.—The Velvet Scoters make their appearance on our coasts in the end of autumn, and depart about the middle of April, although individuals may be seen as late as the middle of May. They frequent the estuaries and bays, especially those of which the bottom is sandy, and the water not of great depth. At this season they procure their food entirely by diving, at which they seem almost as expert as the Ducks and Guillemots, although their speed under the water must be much inferior to that of those birds, as they do not pursue fishes, but live solely on bivalve mollusca of the genera *Mactra*, *Tellina*, *Solen*, *Mytilus*, *Cardium*, and others. Some which I have examined from the Bay of Kirkcaldy had their gizzards filled with *Donax Trunculus* exclusively; but the particular species taken depends upon the locality.

When the weather is not boisterous, they fly out to sea in the evening, and return toward the shores or shallows early in the morning, coming generally in small flocks of from five to fifteen or twenty. They fly very low, or at a moderate height, with considerable speed, moving their extended wings quickly, and on arriving at a suitable place relax their speed a little, and alight on their hinder end, the body being kept oblique. They then trim themselves, look into the water, and commence their operations. They sit lightly on the water, swim with moderate speed, dive by sinking head foremost, rather than by plunging violently, like the fish-pursuing divers, and remain from one to three minutes under. It is of course beautiful to see a flock of any birds emerging in succession; and I have several times been so near them on such occasions as to see pretty distinctly the colours of their bill and feet. If disturbed by the approach of a boat or other vessel,

they generally dive ; but often also take to wing and remove to some distance. They rise heavily from the water, ascending at a very small angle, and striking the surface with their wings for some yards. It is perhaps when on wing that they look most beautiful, the conspicuous white patch on their wing contrasting with their black plumage. Thousands of these birds may often be seen in the Firth of Forth, often intermingled with Black Scoters, and sometimes with other birds.

The Velvet Scoter occurs in winter, here and there, along the whole east coast of Scotland, as well as among the Orkney and Shetland Islands. Although in estuaries it usually appears in small flocks, along the open coast it often collects into very numerous bodies, which may be seen fishing in shallow water, just behind the breakers. In Ireland, as Mr. Thompson informs us, "it has hitherto been observed chiefly on the eastern side of the island, and there very rarely."

In winter this species extends to the southern coasts of England, but is not common there. In so far as I know, it does not breed in any part of Britain. In summer it betakes itself to the arctic regions of both continents, it being as common along the shores of America as of Europe. Mr. Audubon found them in vast multitudes in Labrador, about the middle of June ; but although some remained to breed on its southern shores, the greater part advanced further northward. "The nests were placed within a few feet of the borders of small lakes, a mile or two distant from the sea, and usually under the low boughs of the bushes, of the twigs of which, with mosses and various plants matted together, they are formed. They are large and almost flat, several inches thick, with some feathers of the female, but no down, under the eggs, which are usually six in number, intermediate in size between those of the Eider and King Ducks, measuring an inch and three-quarters in length, one and seven-eighths in breadth, of a uniform pale cream colour, tinged with green, not pure white, as stated by some authors." The young, when about a week old, he found to be covered with "rather stiff and hair-like down, of a black colour, excepting under the chin, where there was a small patch of

white." The young males at this age had also a white spot under the eye.

YOUNG.—When fledged, the young males, according to M. Temminck, "are similar to the old females, but are distinguished from them by the rose-red of the tarsi and toes, as well as by the white spots before and behind the eyes, which are smaller."

IN SUMMER.—The colours are the same as in winter, the plumage becoming tinged with brown toward the end of the season. That of the female also fades greatly. I have examined specimens from the Firth of Forth as far in the season as the 5th of May.

OIDEMIA NIGRA. THE BLACK SCOTER.

COMMON SCOTER. BLACK DUCK.

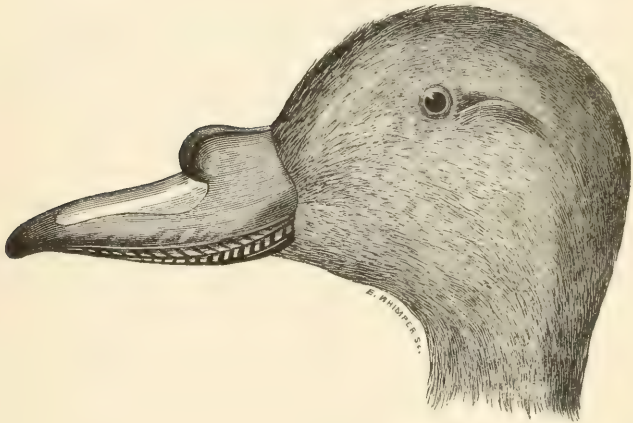


FIG. 69.

- Anas nigra.* Linn. Syst. Nat. I. 196.
Anas nigra. Lath. Ind. Ornith. II. 848.
Anas nigra. Temm. Man. d'Ornith. II. 356.
Oidemia nigra. Flem. Brit. Anim.
Oidemia nigra. Selby, Illustr. Brit. Ornith. II. 239.
Oidemia nigra. Jen. Brit. Vert. Anim. 239.
Oidemia nigra. Bonap. Comp. List, 58.

Male with the bill having a large protuberance at the base above, the rounded lateral prominences partially feathered ; both mandibles black, but the upper with an orange-yellow patch above, including the nostrils ; feet dusky ; plumage entirely black ; tail pointed, of sixteen feathers ; first quill very narrow. Female with the bill dusky, its basal prominence less elevated ; plumage sooty-brown, breast and abdomen paler.

MALE IN WINTER.—The Black Scoter, somewhat smaller than the Velvet, and much less common on our coasts, is of the same form and proportions as it, the body being large and much depressed; the neck rather short and thick; the head large, oblong, compressed.

The bill is nearly of the same length as the head, higher than broad at the base, depressed and flattened toward the end, which is rounded; the upper mandible with a somewhat rounded, compressed knob at the base, its dorsal line rapidly sloping towards the nostrils, then slightly concave, and at the end decurved; the ridge broad and slightly concave at first, toward the end broadly convex, the edges thin, with about thirty lamellæ; the unguis very large and broadly elliptical; the lower mandible flattened, with the intercrural space very long, rather narrow, rounded anteriorly, bare for about half its length; the crura slender, re-arcuate, the edges with twenty-five lamellæ; the unguis very large and broadly elliptical; the gape-line gently re-arcuate.

The tongue, which is an inch and ten-twelfths long, and ten-twelfths in its greatest breadth, has the basal papillæ long and pointed, the sides with two rows of bristles, the tip thin-edged and rounded. The œsophagus is eleven inches long, about ten-twelfths in width; the breadth of the proventriculus about an inch. The stomach is extremely muscular, transversely elliptical, an inch and a half in length, and nearly two inches in breadth; the epithelium dense, rugose, forming two slightly concave grinding surfaces. The intestine is five feet long, of the nearly uniform width of five-twelfths. The cœca, only four inches distant from the extremity of the intestine, are nine inches in length, scarcely three-twelfths in their greatest width.

The trachea, seven inches long, is flattened, about five-twelfths in width, narrowed below to three-twelfths, but without any remarkable dilatations. There are about a hundred rings, cartilaginous behind, in the trachea, and thirty in the bronchi, which are very large and inflated.

The nostrils are elliptical, pervious, four-twelfths long. Eyes rather small. The legs very short, and placed rather

far behind; the tarsus very short, compressed, with small scutella in front, a partial series above the outer toe, the rest reticulated with small angular scales. The hind toe is small, slender, with a pretty large membrane, connected at the base with the marginal membrane of the inner toe, which is also pretty large, and formed into two lobes. The anterior toes are nearly double the length of the tarsus, the inner much shorter than the third and fourth, which are nearly equal; the outer toe with a thick margin. The claws small, arcuate, compressed, that of the first toe very small and curved, of the middle toe largest, with a dilated inner edge.

The plumage is full, dense, soft, slightly glossed; the feathers of the head and neck very small, oblong, velvety; those of the body ovato-oblong, rounded at the end. The wings narrow, pointed, rather short; the primaries strong, pointed, the first longest, with the inner web cut out to a great extent. The tail very short, graduated, acuminate, of sixteen pointed feathers.

The bill is black, but on the upper mandible there is an orange-yellow patch above, including the nostrils; the feet brownish-black, the membranes of a deeper tint. The plumage is deep black, tinged above with green, below with brown.

Length to end of tail $19\frac{1}{2}$ inches; extent of wings 33; bill along the ridge 2; wing from flexure $9\frac{1}{2}$; tarsus 2; hind toe $\frac{9}{12}$, its claw $\frac{3}{12}$; third toe $2\frac{10}{12}$, its claw $\frac{6}{12}$.

FEMALE IN WINTER.—The female has the bill dusky; the feet greenish-brown; the interdigital membranes dusky. The plumage of the upper parts is sooty-brown; the sides of the head and neck paler; the lower part of the neck, the breast, and abdomen, greyish-brown.

Length to end of tail 18 inches; bill $1\frac{10}{12}$; wing from flexure 9; tarsus $1\frac{10}{12}$; third toe and claws $2\frac{2}{12}$.

HABITS.—This species arrives on our coasts after the middle of autumn, and is to be seen here and there, often in considerable flocks, along the whole eastern side of Britain, from Shetland and Orkney, where it is not uncommon, to its southern extremity. It frequents the sandy shores and shell-

banks, where it obtains its subsistence by diving, muscles, mactra, fellinæ, and other species of bivalve mollusca constituting its food. Its habits are essentially the same as those of the Velvet Scoter. I have seen large flocks fishing along the sandy coasts of Aberdeenshire, just beyond, sometimes among, the breakers, seldom within shot from the shore. It swims with moderate speed, dives expertly, and remains long under water. It flies low, with considerable speed, alights heavily on the water, and on rising from it ascends at a very small angle, splashing with the tips of its wings. It is seldom that any are shot along the east coast of Scotland, insomuch that a specimen, obtained at St. Cyrus, and preserved in the Montrose Museum, was considered there, when it was shown to me, as a great rarity. During winter it occurs in the Firth of Forth, but not plentifully, though sometimes considerable numbers are seen. It is said to be abundant on some parts of the coasts of England. In Ireland, also, it "is a regular visitant to certain localities on the coast." Although some individuals have been seen there in summer, it is truly migrant, leaving us for the north in April, and even in Orkney and Shetland is not known to breed.

Very abundant in winter along the coasts of France and Holland, where it is shot and otherwise procured in great numbers; it is said to be in summer dispersed over the northern parts of Europe and Asia. The American Scoter, *Oidemia Americana*, between which and the European I cannot discover any essential difference, after examining several specimens of both, is represented as abundant along the eastern coast in winter, and as breeding in Labrador and more northern tracts. Mr. Audubon's account of it is as follows:—"On the 11th of July, 1833, a nest of this bird was found by my young companions in Labrador. It was placed at the distance of about two yards from the margin of a large fresh-water pond, about a mile from the shore of the Gulf of St. Laurence, under a low fir, in the manner often adopted by the Eider Duck, the nest of which it somewhat resembled, although it was much smaller. It was composed externally of small sticks, moss, and grasses, lined with down, in smaller quantity than that found in the nest of the bird just mentioned,

and mixed with feathers. The eggs, which were ready to be hatched, were eight in number, two inches in length, an inch and five-eighths in breadth, of an oval form, smooth, and of a uniform pale yellowish colour. I afterwards found a female with seven young ones, of which she took such effectual care that none of them fell into our hands. On several occasions, when they were fatigued by diving, she received them all on her back, and, swimming deeply, though very fast, took them to the shore, where the little things lay close among the tall grass and low tangled bushes. In this species, as in others, the male forsakes the female as soon as incubation commences."

YOUNG.—M. Temminck states that "the young males scarcely differ from the adult females, the colours being only paler; the space between the eye and the bill, the top of the head, the occiput, nape and breast, of a deep brown; the space under the eyes, the sides and fore part of the neck, pure white; all the rest of the plumage of a sooty brown; the base of the bill raised; the two mandibles of a livid brown, excepting the nostrils, which are flesh-colour; iris brownish-grey; feet dull yellowish-green; membranes blackish. The young females always have the tints lighter.

REMARKS.—It appears strange that the trachea of this species, which is so very closely allied to the Surf Scoter and the Velvet Scoter, should differ entirely from them in being destitute of the singular-looking dilatations for which these are so remarkable. The trachea of the male Black Scoter, in fact, differs from the simple trachea of the female only in having the bronchi larger, and resembles that of female Ducks in general. This would tend to show that no good generic distinction can be obtained from the trachea.

SOMATERIA. EIDER.

The Eider Ducks are birds of large size, having the body of an elliptical form, and considerably depressed ; the neck of moderate length and thick ; the head large, oblong, compressed.

Bill nearly as long as the head, higher than broad at the base, depressed toward the end, where it is considerably narrowed, but rounded ; upper mandible with the lateral sinuses very large, the upper very long and narrow ; the frontal angles very long, soft, and tumid, in the males forming a protuberance, on which is a medial band of feathers ; the ridge beyond the nostrils becoming convex ; the dorsal line straight and sloping to the unguis, which is extremely large, elliptical, convex, and moderately decurved ; the sides erect at the base, the edges thin, concealing the not very numerous slender lamellæ ; lower mandible flattened, with the intercrural space long, pointed, and partially bare ; the unguis very large, broadly elliptical, little convex ; the gape-line gently rearcuate.

Mouth of moderate width ; anterior palate broadly concave, with a medial prominent line, on which are some tubercles, and from thirty to forty marginal lamellæ. Tongue large, fleshy, with numerous conical papillæ at the base, a deep median groove, two lateral series of bristles, and a thin rounded tip. Œsophagus of moderate width. Stomach a powerful gizzard of a transversely elliptical form, its muscles very large, the epithelium longitudinally rugous, and forming thick grinding plates. Intestine of moderate length, wide ; cæca moderate, narrow.

The trachea of nearly uniform width, but having at the lower end a transversely oblong dilatation, projecting more

on the left side ; the bronchi of moderate length and considerable width.

Nostrils oblongo-elliptical, large, submedial. Eyes small. Aperture of ear small. Legs very short, and placed rather far behind ; tarsus very short, compressed, with small scutella. Hind toe small, slender, with a broad lobiform membrane, connected at the base with the bilobate marginal membrane of the inner toe ; anterior toes long, the third nearly double the length of the tarsus, all scutellate ; interdigital membranes emarginate. Claws small, arcuate, compressed, obtuse, that of the middle toe with the inner edge dilated.

Plumage dense, firm, on the head and neck short and blended ; the feathers on the other parts ovato-oblong, rounded, dense, somewhat glossy. Wings rather short, very convex, narrow, pointed ; primaries acuminate, the first and second longest ; inner secondaries elongated, tapering, curved outwards. Tail very short, much rounded or tapering, of sixteen or fourteen stiffish, narrow, pointed feathers.

The males have the plumage varied with white and black, while that of the females is spotted or streaked with dusky and dull reddish or yellowish-grey. These birds inhabit the cold and frigid zones of both continents, living in the open sea, or in channels and bays, during the greater part of the year, and feeding chiefly on bivalve shell-fish, for which they dive. In summer most of them betake themselves to the arctic regions, where they nestle on the shores of the sea, on islands, or in the turf of rocky places, forming a bulky nest, lined with down, and laying a moderate number of large, smooth, greenish-white eggs. Their flight is steady, direct, moderately rapid, and performed by quick beats. They swim and dive expertly, remain long under the water, and are more or less gregarious, even in the breeding season. The down, which lines the nests, or is intermingled with the eggs, and has been plucked by the female from her breast, is collected in large quantities in some northern localities.

SOMATERIA MOLLISSIMA. THE COMMON, OR WHITE-BACKED EIDER.

EIDER DUCK. ST. CUTHBERT'S DUCK. DUNTER GOOSE.

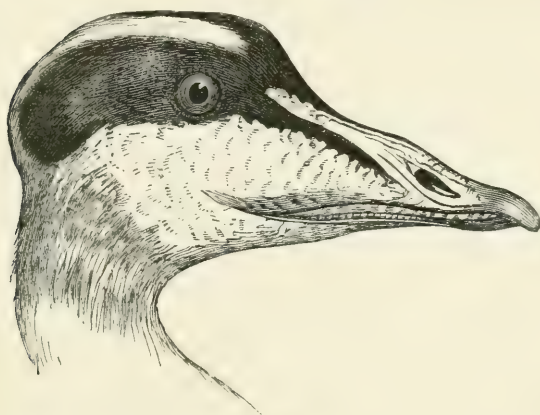


FIG. 70.

Anas mollissima. Linn. Syst. Nat. I. 338.

Anas mollissima. Lath. Ind. Ornith. II. 845.

Eider Duck. Mont. Ornith. Dict. and Suppl.

Canard Eider. *Anas mollissima.* Temm. Man. d'Ornith. II. 848.

Common Eider. *Somateria mollissima.* Selby, Illustr. II. 338.

Somateria mollissima. Jen. Brit. Vert. Anim. 237.

Somateria mollissima. Bonap. Comp. List, 57.

Male with the frontal angles of the bill very narrow and, though fleshy, little elevated; the head black above, with a medial white band; the hind part of the cheeks and nape pale green; the throat, hind-neck, back, scapulars, smaller wing-coverts, and inner secondary quills white; the breast, sides, abdomen, and rump black; the fore-neck cream-coloured; tail of sixteen feathers. Female with the frontal

angles less elevated and shorter; the head and neck pale reddish-brown, finely streaked with dusky; the lower parts similarly coloured, but with the markings transverse, and the ground colour passing gradually into dusky brown; the upper parts dark brown, transversely lunulated with light red. Young nearly similar to the female.

MALE IN SUMMER.—The Common or White-backed Eider, although remarkable for the beauty of its plumage, is what may, without much impropriety, be called a very clumsy bird. Its body is bulky, much depressed, and of an elliptical form; the neck of moderate length; the head large, oblong, and compressed.

The bill is nearly as long as the head, higher than broad at the base, depressed toward the end, where it is considerably narrowed, but rounded; the upper mandible with the lateral sinus very large and rather pointed, the upper sinus very long and narrow; the frontal angles very long, narrow, soft, and tumid, as is the ridge as far as the nostrils, and marked with oblique divergent lines; the dorsal outline nearly straight and sloping to the unguis, which is extremely large, elliptical, convex, and moderately decurved, with a thick grooved edge, the ridge broad, slowly narrowed, and becoming more convex; the sides sloping, the edges marginate, scrobiculate externally, with about fifty internal lamellæ, the outer ends of which do not project, but are marked by a series of external scrobiculi; nasal sinus narrow elliptical, sub-basal; lower mandible with the intercrural space long, rather wide, pointed, and partially bare; the outline of the crura nearly straight, their sides gradually more inclined outwards, the edges with about sixty external lamellæ; the unguis very large, broadly elliptical, little convex.

The mouth is an inch in width; the anterior palate concave. The tongue, two inches in length, is fleshy, very thick, with a deep median groove, two lateral series of bristles, and a semicircular, thin-edged, sub-cartilaginous tip. The œsophagus, eleven inches long, one inch in width, enlarges on the lower part of the neck to an inch and two-

thirds, then narrows to an inch ; its walls very thick, the inner coat longitudinally plicate ; the proventricular part an inch and a quarter in breadth. The stomach, an extremely large and muscular gizzard, situated obliquely, two inches and a half in length, three inches in breadth, the muscles an inch and a quarter in thickness ; the epithelium thick, dense, with two elliptical grinding plates. The intestine is six feet four inches long, half an inch in width, enlarging a little toward the cœca, which are three inches and three-fourths long, only one-twelfth wide at the base, their greatest width four-twelfths, narrowed to two-twelfths at the end, which is obtuse ; the rectum four inches long, gradually enlarging to ten-twelfths.

The trachea, nine inches long, is nearly uniformly five-twelfths in breadth, with a transversely oblong dilatation at the lower end, projecting more to the left side, an inch in breadth, and half an inch in length. The bronchi are very wide, of moderate length, and with about thirty rings.

The nostrils are large, oblongo-elliptical, five-and-a-half-twelfths long, sub-medial, nearer the ridge than the margin. The eyes small, as are the apertures of the ears. Legs very short, stout, placed rather far behind ; a very small part of the tibia bare ; tarsus compressed, with eighteen medial and ten outer scutella, the rest reticulated. Hind toe small, with a broad lobiform membrane connected at the base with the loose bilobate membrane of the second toe ; the anterior toes long, the outer about equal, the third with thirty-two scutella, and double the length of the tarsus ; interdigital membranes emarginate and denticulate. The claws are small, compressed, blunt, arcuate, that of the hind toe more curved and slender, of the middle toe curved outwards, internally expanded and rounded.

The plumage is rather short and dense. The feathers of the head short, soft, blended, rounded, with the terminal filaments disunited ; the occipital, and upper posterior and lateral cervical, are rather long, stiff, linear, and terminated by a pencil of disunited stiffish filaments, with silky lustre ; feathers of the neck and breast softish, blended, and rounded ; of the upper parts obovate, and rather distinct. The wings

are rather short, very concave, narrow, and pointed; the primary quills curved, strong, tapering, the first a twelfth of an inch shorter than the second, the rest quickly decreasing; the outer secondaries broad and rounded, the inner eight elongated, tapering, and curved outwards. The tips of the wings extend only to the base of the tail, which is very short, rounded, slightly decurved, of sixteen stiffish pointed feathers.

The rough tumid basal part of the upper mandible is oil-green, the rest bluish-grey tinged with green, the unguis greyish-yellow; the unguis and end of the lower mandible pale greenish-grey, the rest bluish-grey tinged with green. The iris is deep brown. The feet are oil-green, the membranes and soles pale greenish-brown, the claws pale brown. The upper part of the head is black, that colour including the lower eyelids, and margining the lateral sinus above as far as the nostrils; from near the middle of the head above to the occiput, a medial band of white. The sides of the head, the throat, and the neck are white; but the hair-like feathers on the hind part of the cheeks and nape are of a delicate pale green; and the lower neck all round, but especially before, is cream-coloured. The back, smaller wing-coverts, and inner elongated curved secondary quills are white, the scapulars tinged with yellow. The alula, primary coverts, and quills are greyish-brown, the outer secondary quills and their coverts brownish-black. The breast, abdomen, sides, and upper tail-coverts, with the medial part of the rump, brownish-black; the lower wing-coverts partly white, but chiefly grey; the tail greyish-brown. The gloss on the black parts is ordinary, on the white dullish, on the pale green of the head and neck silky.

The above description is taken from a recent specimen, shot near North Berwick, in the beginning of May, 1824, and corrected by comparing many others at various times.

Length to end of tail 26 inches; extent of wings 40; wing from flexure $11\frac{1}{2}$; tail 4; bill along the ridge $2\frac{2}{12}$, from the frontal angles 3, along the edge of lower mandible $2\frac{0}{12}$, its height at the base $\frac{1}{12}$, its breadth behind the unguis $\frac{0}{12}$; tarsus $1\frac{10}{12}$; hind toe $\frac{0}{12}$, its claw $\frac{3}{12}$; second

toe 2, its claw $\frac{4}{12}$; third toe $2\frac{1}{2}$, its claw $\frac{5}{12}$; fourth toe $2\frac{7}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female, which is not much smaller, has the plumage less blended, the scapulars and inner curved secondaries shorter, and the feathers of the upper parts very broad, distinct, and rounded, of the lower less distinct, none of the feathers on the cheeks and nape hairlike. The colours are also very different. The bill, which is shorter, with its basal part less tumid, is of a greenish dusky tint, with the unguis of the upper mandible bluish horn-colour, that of the lower purplish. The feet are greenish dusky, the scutella approaching to oil-green. The upper part of the head is deep brown, with longitudinal streaks of brownish-white; its sides and the throat light grey, with small longitudinal dots of deep brown; the upper part of the neck all round light brownish-red, with small dusky streaks; the lower neck all round with semilunar spots of deep brown, pale yellowish-brown, and dull white, each feather having toward the end, first a bar of dusky not seen, then a band of pale brown, then another of blackish-brown, and the disunited margins greyish-white. On the lower neck anteriorly the white of the margins predominates, and is deeply tinged with brownish-yellow. The feathers of the back and the scapulars are brownish-black, with pale yellowish-brown margins; the hind part of the back is similar, but with the markings smaller, all being transverse. The wing-coverts similar, but lighter. The quills are deep brown, the outer secondaries with the terminal margin of the outer web white, the inner secondaries with the outer web pale reddish-brown; the primary and secondary coverts correspond in colour with their quills, and there is a bar of white along the tips of the secondary coverts. The tail-feathers are deep brown, with ash-grey margins. The fore part of the breast is dull reddish, barred with dusky; on the rest of the breast and the abdomen the ground colour becomes deep greenish-brown, and the bars more obscure, but the sides are brightly coloured; the axillars and some of the lower wing-coverts white, but the lower surface of the wing in general is grey.

Length to end of tail 24 inches; extent of wings 38; wing from flexure $11\frac{1}{4}$; tail 4; bill along the ridge $2\frac{1}{2}$; tarsus $1\frac{9}{12}$; middle toe and claw $2\frac{0}{12}$.

VARIATIONS.—The males vary little in colour, but considerably in size; the extremes of length in those which I have examined being $24\frac{1}{2}$ and 27, those of extent of wings 39 and 42. The females vary in colour nearly as much as the “Red Grouse,” the dark tints of the back shading between brownish-black and dark brown, the light tints between brownish-white and yellowish-red. The tail-feathers are generally much worn, and their tips broken in summer.

HABITS.—The Eider Duck or Goose, as it has been variously called, is reported by travellers and voyagers to be very abundant in the arctic regions of both continents, on the coasts of Norway, Sweden, Iceland, and Labrador, and to occur, in diminished numbers, some degrees farther southward. It is not unfrequent along the shores of the northern parts of Scotland, the Hebrides, Shetland and Orkney Islands. In the outer Hebrides are many places in which it breeds, although nowhere in great numbers. The same may be said of Shetland and Orkney, and some occur in summer about the Bass Rock, and even on the Fern Islands, on the coast of Northumberland. They betake themselves to their breeding places in the beginning of May. The eggs are deposited in the end of that month or the beginning of June. It has been alleged by some that the males leave the females after incubation commences, and this is true to a certain extent, for the males having nothing to do with that process, do not remain constantly with the females, but engage in their ordinary pursuits, often collecting into flocks of a few or many individuals, although they remain in the neighbouring parts, and occasionally visit their mates, or at least are seen on shore near them. The nest is usually made in a superficial cavity in the turf, and is composed of sea-weeds and withered grass, together with various maritime plants, as *Statice Armeria* and *Plantago maritima* and *Coronopus*. The eggs, which vary from five to eight, are of a longish oval

form, smooth and glossy, and of a pale greenish-grey, generally three inches in length, an inch and eleven-twelfths, or two inches in breadth. When they have been laid, the female plucks the down from her breast, and deposits it among them. I have never found it in a pure state, it being intermixed with fragments of plants, on being freed from which the quantity in a nest may be compressed within a space less than two inches in diameter, although, on being shaken out, it will extend to nine or ten inches. If the eggs are removed the female will usually lay again, in which case the down is so entirely plucked from her lower parts, together with the finer filaments of the feathers themselves, that the breast and abdomen present a very singular appearance, inducing one to think that the bird must be in a most uncomfortable state.

Soon after the young are hatched they follow their mother to the water, or in certain cases, as when the nest has been placed on a rock, are carried there successively in her bill. This I have never seen done ; but several writers—none of whom, however, seem to have seen it either—declare it to be true ; and it is certain that Ducks which build in trees must remove their young in that way. The young, at first covered with dusky down, are very expert swimmers and divers ; but their food at this early age has not been determined, although it must consist of small marine animals. They are anxiously tended by the mother, who does all in her power to protect them from Gulls and men, by diving with them, fluttering on the water, and leading their pursuers away by pretending to be crippled.

The food of the Eider consists of bivalve mollusca, which it obtains by diving, as well as of crustacea, fishes, and the roe of both. I am not aware of its ever feeding on vegetable substances in its natural state, and yet, when domesticated, it has been found readily to eat grain. This remarkable facility of transition from an animal to a vegetable food appears to be very common in this family of birds, and is said to produce a corresponding change in the character of their flesh as an article of food. That of the Eider, under its common regimen, is, I think, fully as palatable as the flesh of

the Mallard. The flight of this bird is direct, steady, and moderately rapid, being performed by continuous quick beats of the wings, generally low over the water. It swims well, sitting lightly, although, from the flatness of its body, it seems to sink considerably, and on diving is capable of remaining a considerable time under the water. In all these respects it differs little from the Scoters and Fuligulæ. It is difficult to shoot, being wary, and diving rapidly.

In Scotland the Eiders are not sufficiently numerous to be of any importance in an economical point of view ; but in the northern countries of Europe their down, with that of other sea-birds, forms an article of commerce in much request, being employed for coverlets and quilts, for which, from its extreme lightness, elasticity, and non-conduction of heat, it is well adapted. In these qualities I do not find it superior to that of the King-Duck, which is, in fact, somewhat finer, nor to that of *Aythya Ferina*, *Fuligula cristata*, and *Marila*, although that of the latter bird is coarser. All the *Anatinæ* that I have examined with this view, as well as all the *Anserinæ*—of which, however, the down, although finer, is less elastic—are pretty much alike, and the Eider down has obtained its celebrity simply because it is the only kind easily procured in quantity. It has been alleged that “as plucked from the living bird it is much more elastic than when taken from the body after death ;” but on comparing some down plucked from a Davis’ Straits’ specimen now before me with some collected in nests in the outer Hebrides, I find that the down from the dead bird is rather superior in elasticity, probably because it has not been in any degree crumpled or entangled, as the other has slightly been.

Mr. Audubon, who gives by much the best account of the habits of this bird that I have seen, states that “in Labrador the Eider Ducks begin to form their nests about the last week of May. Some resort to islands scantily furnished with grass, near the tufts of which they construct their nests ; others form them beneath the spreading boughs of the stunted firs, and in such places five, six, or even eight are sometimes found beneath a single bush. Many are placed on the sheltered shelvings of rocks a few feet above high-water mark,

but none at any considerable elevation, at least none of my party, including the sailors, found any in such a position. The nest, which is sunk as much as possible into the ground, is formed of sea-weeds, mosses, and dried twigs, so matted and interlaced as to give an appearance of neatness to the central cavity, which rarely exceeds seven inches in diameter. In the beginning of June the eggs are deposited, the male attending upon the female the whole time. The eggs, which are regularly placed on the moss and weeds of the nest, without any down, are generally from five to seven, three inches in length, two inches and one-eighth in breadth, being thus much larger than those of the Domestic Duck, of a regular oval form, smooth-shelled, and of a uniform pale olive-green. When the full complement of eggs has been laid, the female begins to pluck some down from the lower part of the body; this operation is daily continued for some time, until the roots of the feathers, as far forward as she can reach, are quite bare, and as clean as a wood from which the shrubbery has been cleared away. This down she disposes beneath and around the eggs. When she leaves the nest to go in search of food she places it over the eggs, and in this manner it may be presumed to keep up their warmth, although it does not always ensure their safety, for the Black-backed Gull is apt to remove the covering, and suck, or otherwise destroy the eggs.

No sooner are the young hatched than they are led to the water, even when it is a mile distant, and the travelling difficult, both for the parent bird and her brood; but when it happens that the nest has been placed among rocks over the water, the Eider, like the Wood Duck, carries the young in her bill to their favourite element. The care which the mother takes of her young for two or three weeks, cannot be exceeded. She leads them gently in a close flock in shallow water, where, by diving, they procure food, and at times, when the young are fatigued, and at some distance from the shore, she sinks her body in the water, and receives them on her back, where they remain several minutes. At the approach of their merciless enemy, the Black-backed Gull, the mother beats the water with her wings, as if intending to raise the spray round her; and, on her uttering a peculiar

sound, the young dive in all directions, while she endeavours to entice the marauder to follow her, by feigning lameness, or she leaps out of the water and attacks her enemy, often so vigorously, that, exhausted and disappointed, he is glad to fly off, on which she alights near the rocks, among which she expects to find her brood, and calls them to her side. Now and then I saw two females which had formed an attachment to each other, as if for the purpose of more effectually contributing to the safety of their young, and it was very seldom that I saw these prudent mothers assailed by the Gull.

The young, at the age of one week, are of a dark mouse-colour, thickly covered with soft warm down. Their feet at this period are proportionally very large and strong. By the 20th of July they seemed to be all hatched. They grew rapidly, and when about a fortnight old were with great difficulty obtained, unless during stormy weather, when they at times retired from the sea to shelter themselves under the shelvings of the rocks at the head of shallow bays. It is by no means difficult to rear them, provided proper care can be taken of them, and they soon become quite gentle and attached to the place set apart for them. I have no doubt that if this valuable bird were domesticated, it would prove a great acquisition, both on account of its feathers and down, and its flesh as an article of food. When in captivity, it feeds on different kinds of grain and moistened oatmeal, and its flesh becomes excellent. Indeed, the sterile females which are procured at Labrador in considerable numbers, tasted as well as the Mallard. The males were tougher and more fishy, so that we rarely ate of them, although the fishermen and settlers paid no regard to sex in this matter.

When the female Eider is suddenly discovered in her nest, she takes to wing at a single spring; but if she sees her enemy at some distance, she walks off a few steps, and then flies away. If unseen by a person coming near, as may often happen, when the nest is placed under the boughs of the dwarf fir, she will remain on it, although she may hear people talking. On such occasions my party frequently discovered the nests by raising the pine branches, and were often as much startled as the Ducks themselves could be, as the latter

instantly sprung past them on wing, uttering a harsh cry. Now and then some were seen to alight on the ground within fifteen or twenty yards, and walk as if lame and broken-winged, crawling slowly away, to entice their enemies to go in pursuit. Generally, however, they would fly to the sea, and remain there in a large flock until their unwelcome visitors departed. When pursued by a boat, with their brood around them, they allowed us to come up to shooting distance, when, feigning decrepitude, they would fly off, beating the water with partially extended wings, while the young either dived or ran on the surface with wonderful speed, for forty or fifty yards, then suddenly plunged, and seldom appeared at the surface unless for a moment. The mothers always flew away as soon as their brood dispersed, and then ended the chase. The cry or note of the female is a hoarse rolling croak ; that of the male I never heard."

YOUNG.—When completely feathered, the young males and females resemble the adult female.

PROGRESS TOWARDS MATURITY.—In the first winter and spring, the males have the upper part of the head, its sides, and the upper part of the neck, greyish-brown, spotted with deep brown ; the lower part of the neck and the breast barred with black and white ; the upper parts blackish-brown, the feathers edged with pale brown ; the wing-coverts and inner secondary quills whitish ; the bill and legs greenish-grey. In the second year the white patches are seen on the neck, back, and wings ; the greater part of the back is black ; and the lower parts of the body are variegated with light red, whitish, and black spots. In the next stage the colours are nearly as in the adult, the full colouring of which is not assumed, it is stated by various writers, until the fourth year.

REMARKS.—It seems rather strange that in Ireland this bird ranks only as "an extremely rare visitant," only two individuals being positively announced by Mr. Thompson as having been obtained there, although some others are mentioned.

SOMATERIA SPECTABILIS. THE KING, OR BLACK-BACKED EIDER.

KING DUCK.

- Anas spectabilis.* Linn. Syst. Nat. I. 195.
Anas spectabilis. Lath. Ind. Ornith. II. 845.
 King Duck. Mont. Ornith. Dict. and Suppl.
 Canard à tête grise. *Anas spectabilis.* Temm. Man. d'Ornith. II.
 King Eider. *Somateria spectabilis.* Selby, Illustr. II. 343.
Somateria spectabilis, King Duck. Jenyns, Brit. Vert. Anim. 238.
Somateria spectabilis. Bonap. Comp. List, 57.

Male with the frontal angles of the bill very broad, rounded, fleshy, and much elevated, so as to form a large compressed protuberance ; the upper part of the head and nape light greyish-blue ; the cheeks pale green ; the throat white, with two bands of black meeting anteriorly at a very acute angle ; the hind-neck and part of the back white ; the fore-neck richly cream-coloured ; the back, scapulars, and inner secondary quills, black, as are the breast, sides, abdomen, and rump ; a spot on each side of the latter, and the middle smaller wing-coverts, white ; tail of fourteen feathers. Female with the frontal angles less elevated and shorter ; the head and neck pale reddish-brown, finely streaked with dusky ; the lower parts similarly coloured, but with the markings transverse, and the ground colour passing gradually into dusky brown ; the upper parts dark brown, transversely lunulated with light red. Young nearly similar to the female.

MALE IN SUMMER.—The “ King Duck ” is so very similar in form and style of colouring, that ornithological system-makers have been deterred from referring it to a genus distinct from that of the “ Eider Duck,” although the protuberance caused by the modification of the frontal angles of the bill would probably have induced them so to act, had the

colours of the plumage been very different. In most respects the description of the one applies to the other, and the females, even in colour, are extremely similar. The present species I must describe from arctic specimens, "in the skin," or more correctly, without flesh, as I have never had a fresh individual, or seen more than one killed in Britain, and it imperfect. The general form is that of the other species.

The bill is shorter than the head, higher than broad at the base, depressed toward the end, where it is considerably narrowed, but rounded; the upper mandible with the lateral sinus very long, and extremely narrow, or linear, being encroached upon by the frontal angles, which are soft, tumid, coarsely ridged, broad, rounded, and causing a large compressed prominence at the base of the bill, the dorsal line declinate to the unguis, which is large, elliptical, convex, and moderately decurved, with a thick grooved edge, the ridge broad and flattened at the base, with a medial ridge, slowly narrowed and becoming convex, the sides sloping and convex, the edges marginate, scrobiculate externally, with about forty-five internal lamellæ, of which the outer ends do not project; nasal sinus elliptical, rather small, sub-basal; lower mandible with the intercrural space long, rather wide, pointed, and partially bare, the outline of the crura nearly straight, their sides gradually more inclined outwards, the edges with about fifty external lamellæ, the unguis very large, broadly elliptical, little convex.

The nostrils are rather large, oblong, four-twelfths long, sub-basal near the ridge. The legs are very short, stout, placed rather far behind; a very small part of the tibia bare; tarsus compressed, with sixteen medial and eight outer scutella, the rest reticulated. Hind toe small, with a broad lobi-form membrane connected at the base with the loose bilobate membrane of the second toe; the anterior toes long, the outer about equal, the third with forty-four scutella, and nearly double the length of the tarsus; interdigital membrane emarginate and denticulate. The claws are small, compressed, bluntish, arcuate, that of the hind toe more curved and slender, of the middle toe curved outwards, internally expanded, and rounded.

The plumage is rather short and dense. The feathers on the head very small and blended, on its upper part very narrow and soft, on the cheeks very stiff, hair-like, and glossy; on the neck and breast softish, rounded, and blended; on the upper and lower parts oblong and blended. The wings are rather short, very concave, narrow, and pointed; the primary quills narrow and pointed, the first two-twelfths of an inch shorter than the second, the rest quickly decurving; the outer secondaries broad and rounded, the inner eight elongated, tapering, and curved outwards. The tips of the wings do not extend beyond the base of the tail, which is very small, rounded, of fourteen stiff, narrow, pointed feathers.

The bill is flesh-coloured; the sides of the upper mandible and the basal lobes orange. The iris yellow. The feet dull orange, with the webs dusky, and the claws dark-brown, blackish toward the end. The base of the upper mandible is margined by a narrow black back, running between the lobes, and sending off posteriorly a line passing in the loreal space, and beneath the eye; on the throat are two black bands meeting anteriorly at a very acute angle. The upper part of the head is light greyish-blue, that colour passing continuously along the nape, and then expanding laterally; the cheeks pale green, that colour separated from the blue of the nape by an oblique white line; the throat white; the lower fore part of the neck rich cream-colour; its hind part, a portion of the back, a patch on the wing-coverts, and a roundish spot on each side of the rump, white. The rest of the back, the scapulars, and the secondary wing-coverts, black; the smaller wing-coverts, alula, and primary quills and coverts, brownish-black externally, greyish-brown on the inner webs; the secondary quills darker. The lower parts of the body brownish-black; the lower wing-coverts grey, but some of them, as well as the axillary feathers, white.

Length to end of tail 23 inches; wing from flexure $10\frac{3}{4}$; tail $3\frac{1}{2}$; bill along the ridge $1\frac{5}{12}$; along the edge of lower mandible $2\frac{5}{12}$; its height at the base before the prominence $\frac{8}{12}$; its height behind the unguis $\frac{8}{12}$; tarsus $1\frac{8}{12}$; first toe $\frac{8}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{8}{12}$, its claw $\frac{6}{12}$; third toe $2\frac{5}{12}$, its claw $\frac{6}{12}$; fourth toe $2\frac{5}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female of this species is so very similar to that of the common Eider that it is difficult to distinguish them. It is considerably smaller than the male, and has the plumage less blended, the scapulars and inner curved secondaries shorter. The bill, which is shorter, with its tumid basal angles narrow, not expanded as in the male, is of a pale greenish-grey tint, with the unguis of the upper mandible bluish-grey tinged with yellow. The feet are dull greenish-grey. The head and neck are light greyish-yellow, with small streaks of brownish-black; the throat paler; the lower neck all round, with the fore part of the breast and the sides, yellowish-grey variegated with dusky, each feather having a brownish-black central patch and a sub-marginal band of the same. The lower parts generally are of a uniform pale yellowish-brown; the feathers of the sides and the lower tail-coverts spotted and barred with brownish-black. The feathers of the back and the scapulars are brownish-black, with yellowish-grey margins. The quills and tail-feathers are deep greyish-brown; the recurved inner secondaries dusky, with their outer margins yellowish-grey.

Length to end of tail 21 inches; bill $1\frac{4}{12}$; tarsus $1\frac{7}{12}$; third toe $2\frac{4}{12}$, its claw $\frac{5}{12}$.

HABITS.—The “King Duck” is described as resembling the “Eider Duck” in its habits, and as equally numerous in the arctic regions, whence, however, it does not extend so far southward, a very few individuals only having been obtained in Britain. Montagu, in the supplement to his Ornithological Dictionary, says:—“We are assured by Mr. Bullock that he found this bird breeding in Papa Westra, one of the Orkney Islands, in the latter end of June. It lays six yellowish-white eggs, rather less than those of the Eider Duck, and, like that bird, covers the eggs with its own down. The nest was on a rock impending the sea.” Mr. Jenyns states that it has been killed on the coast of Suffolk; and Mr. Thompson mentions one killed in Ireland. Mr. Dunn, who visited Papa Westra, and the most northern of the Orkney Islands, where it was reported to breed, searched there for it in vain. Messrs. Baikie and Heddle say it has not been known to

breed there for several years, and is now only a rare occasional visitant to Orkney. Mr. St. John says it is sometimes seen at the Kyle of Tongue, in Sutherland.

It is said to be of rare occurrence in Denmark and Norway; to breed in small numbers in Feroe and Iceland; but to be plentiful, in the breeding season, in Nova Zembla, Spitzbergen, Greenland, the North Georgian Islands, and other parts of the extreme north. "Vast numbers of this beautiful Duck," Captain James C. Ross states, "resort annually to the shores and islands of the arctic regions in the breeding season, and have on many occasions afforded a valuable and salutary supply of fresh provision to the crews of the vessels employed on those seas. On our late voyages comparatively few were obtained, although seen in very great numbers. They do not retire far to the south during the winter, but assemble in large flocks; the males by themselves, and the females with their young brood, are often met with in the Atlantic Ocean, far distant from any land, where the numerous crustaceous and other marine animals afford them abundance of food."

Mr. Audubon says it rarely advances farther south than the neighbourhood of the Bay of Boston, although formerly it was not at all of rare occurrence there during winter, and a few had been known to breed in company with the Eider along the coast. He saw some in Labrador, but did not find any nests.

REMARKS.—This species, extremely rare in Scotland, has been found in Ireland, although there also "extremely rare," more frequently than in Britain. Mr. Thompson records the occurrence of a female shot at Kingstown Harbour in October 1837; two specimens, females or immature males, obtained by Mr. R. Chute, one in the winter of 1843, from Derrynane, the other in that of 1846, from Tralee Bay; a fourth bird, a female, shot in March 1850, in Belfast Bay.

STELLERIA.

A genus, to which various names, as *Stelleria*, *Polysticta*, *Macropus*, has been given, seems to many ornithologists necessary for the reception of a Duck, first named *Anas dispar* by Gmelin, and which some have considered as a Pochard, others as a Scaup-Duck, a Garrot, or an Eider. Not having seen this bird, I am not qualified to speak decidedly as to its position ; but, judging from the figures and descriptions of recent authors, I should feel disposed to agree with Mr. Yarrell in placing it among or near the Eiders.

STELLERIA DISPAR. THE PIED STELLERIA.

WESTERN DUCK. STELLER'S DUCK.

Anas dispar. Gmel. Syst. Nat. I. 535.

Anas dispar. Lath. Ind. Ornith. II. 866.

Fuligula dispar. Selby, Illustr. Brit. Ornith. II. 360.

Fuligula dispar. Western Pochard. Jenyns, Brit. Vert. Anim. 243.

Anas dispar. Temm. Man. d'Ornith. IV. 547.

Stellaria dispar. Bonap. Comp. List, 57.

MALE.—Various descriptions are given by British and American authors, from whose statements one might compile a pretty good account of this rare bird, of which only a single specimen has been obtained in England. This specimen, which was shot in February, 1830, at Caistor, near Yarmouth, has been figured in Mr. Audubon's "gigantic work," from a drawing made by his son, John Woodhouse; as well as by Mr. Yarrell, in his deservedly esteemed History of British Birds, from a drawing made by Mr. Charles Buckler. It is described in Mr. Audubon's work, partly from the plate and partly from notes taken by Mr. Audubon, jun., part of the description being as follows:—

"Bill dull greyish-blue, as are the feet; the claws yellowish-grey. The upper part of the head and a broad band surrounding the neck are white; the throat and some feathers surrounding the eye are black; a light green patch in the loreal space, and a transverse patch of the same on the nape, margined behind and laterally with black. A broad band on the neck and the whole of the back are velvet-black, with green reflections; the smaller wing-coverts white; the secondary coverts (it ought to be the outer secondary quills) bluish-black, terminating in a broad white band; the elongated secondaries and scapulars with the inner web

white, the outer black with blue reflections; the primaries and coverts brownish-black, the tail black, as are the lower tail-coverts and abdomen; the rest of the lower parts deep reddish-buff, fading towards the shoulders and neck into pure white; there is a bluish-black spot on each side of the lower part of the neck anterior to the wing.

“Length to end of tail 16 inches; bill along the ridge $\frac{9}{12}$; wing from flexure $8\frac{3}{8}$; tail 4; tarsus $1\frac{3}{16}$; inner toe and claw $1\frac{1}{2}$; middle toe and claw $2\frac{1}{8}$; outer toe and claw $2\frac{1}{4}$; breadth of unguis of upper mandible $\frac{3}{8}$; breadth of bill at base $\frac{5}{8}$.”

Mr. Yarrell gives a description of an adult male taken from a specimen belonging to Mr. John Leadbeater. But, to avoid extracting too much from an esteemed fellow-student, I may give M. Temminck's account:—“Space between the bill and the eye, and a large occipital patch, of a fine pistachio-green; throat, fore part of neck, and a spot behind the eyes, pure black; all the rest of the head and the upper part of the neck pure white; at the lower part of the neck a broad bottle-green collar; this tint a little darker extends over the feathers of the back; the thoracic region, the wing-coverts, and the greater portion of the scapulars, pure white; the longest of the scapulars curved like a sickle; these feathers have the outer barbs (webs) broad, and of a glossy blackish-blue; their inner barbs (webs) are very narrow and white. (He omits the blue speculum, tipped with white, of the outer secondary quills.) Breast and lower parts of a fine yellowish-red, deeper on the abdomen; there is on each side of the breast a large ovoidal black spot; quills and tail-feathers blackish-brown. Bill and feet blackish-grey; iris light brown. Length 17 to 18 inches. The old male three years old.”

FEMALE.—“The female and the young male have the head and neck cream-coloured, with brown streaks; back black, with the edges of the feathers light red; breast deep brown, marbled with red and chestnut; wing-coverts slate-colour, the largest tipped with white; that colour forms a transverse band; a second white band is produced by the

extreme tip of the secondaries ; the space between these two bands forms a blue speculum, with steel-blue reflections ; the scapulars are a little curved at their extremity, but not nearly so much so as in the old male, which has them falcately curved ; all the lower parts, the quills, and the tail are blackish-brown."

HABITS.—Scarcely anything seems to be known respecting its habits. It is said to inhabit Asia and North America. It was first described from specimens obtained by Steller in Kamtschatka, where it is said to nestle on inaccessible rocks. Specimens have been brought from the north-west coast of America, but it has not been seen on the eastern coasts. An individual is stated to have been obtained in Yorkshire, in August, 1845.

CLANGULA. GARROT.

THE species of which this genus is composed are inferior in size to the Eiders and Scoters, from which they are distinguished by having the bill shorter, and destitute of the fleshy elongated frontal angles of the former, and of the lateral bulgings of the latter. Their body is full, ovate, compact, and slightly depressed; the neck rather short and thick; the head large, compressed, and rounded above.

Bill shorter than the head, much higher than broad at the base, gradually depressed, and becoming considerably narrowed to the end, which is rounded; upper mandible with the lateral sinuses broad and rounded, the basal angles short or moderate, the ridge broad and flattened at the base, the unguis large and convex, the edges thin, concealing the not much elevated lamellæ; lower mandible flattened, with the intercrural space long, rather wide, pointed, and partially bare; the unguis very large, broadly elliptical, little convex.

Mouth of moderate width; anterior palate broadly concave, with a median prominent tuberculate line. Tongue fleshy, very thick, deeply grooved above, the edges posteriorly serrate, anteriorly lamelloso-fibrillate, the tip thin-edged and semicircular. Œsophagus of moderate width; stomach large, transversely elliptical, its muscles very large, the epithelium dense and rugous, with two elliptical grinding plates. Intestine of moderate length, wide; cæca long, and rather narrow.

Trachea in the male generally much enlarged about the middle, and having at the lower end an extremely large bony and membranous dilatation.

Nostrils oblong, large, medial, Eyes small. Aperture of ear small. Legs very short, and placed rather far behind; tarsus compressed, with small scutella. Hind toe small.

very slender, with a broad lobiform membrane connected at the base with the bilobate marginal membrane of the inner toe ; anterior toes long, the third nearly double the length of the tarsus ; interdigital membranes full. Claws small, arcuate, compressed, rather obtuse, that of the middle toe curved outwards, internally expanded, and rounded.

Plumage dense, blended, soft ; on the head very soft and rather long ; wings short, narrow, convex, pointed ; the second quill longest, but scarcely exceeding the first ; inner secondaries elongated, and curved outwards. Tail short, graduated, of sixteen stiffish pointed feathers.

These birds inhabit the cold and temperate regions of the north. They feed chiefly on mollusca, for which they dive ; have a quick direct flight, sit rather lightly on the water, and are more active than the Scoters, which they, however, resemble in their habits.

CLANGULA HISTRIONICA. THE HARLEQUIN GARROT.

HARLEQUIN DUCK.

Anas histrionica. Linn. Syst. Nat. I. 204.

Anas minuta. Linn. Syst. Nat. I. 204.

Anas histrionica. Lath. Ind. Ornith. II. 849.

Harlequin Duck. Mont. Orn. Dict.

Canard a collier ou Histrion. *Anas histrionica.* Temm. Man. d'Ornith. II. 878.

Harlequin Garrot. *Clangula histrionica.* Selby, Illustr. II. 371.

Clangula histrionica. Harlequin Garrot. Jenyns, Brit. Vert. Anim. 246.

Clangula histrionica. Bonap. Comp. List, 58.

Male about seventeen inches long, with the bill yellowish-brown, the feet greyish blue, the webs dusky ; the head, upper neck, and upper parts of the body dusky greyish blue ; a triangular white patch before the eye, a round spot behind the ear, a longitudinal mark on the neck, a narrow collar about its middle, a band across its lower fore part, some of the scapulars, the tips of the secondaries, and a spot on the side of the rump, white ; a band of white and light-red over the eye to the nape ; the space between the white bands on the neck, and the fore part of the breast, light greyish-blue, the hind part tinged with brown, the sides light-red, the feathers under and above the tail bluish-black ; all the white markings on the head and neck edged with black. Female about fifteen inches long, with the bill and feet dull greyish-blue, the general colour of the plumage greyish-brown, lighter beneath ; the fore part of the head brownish-white, and a roundish white spot behind the ear. Young similar to the female, having the upper parts dull brown, the lower brownish-white, transversely undulated with brown.

MALE IN WINTER.—This species, of which only a few individuals have been found with us, has the body full, elliptical, and depressed; the neck rather short, and thick; the head rather large, oblong, compressed, rounded above. The bill is much shorter than the head, tapering, of nearly the same height and breadth at the base; the upper mandible with the lateral sinuses wide and rounded, the upper acute, the frontal angles short and rather obtuse, the dorsal line straight and sloping to the middle, then nearly straight, at the end decurved, the ridge broad and flattened at the base, the unguis large, elliptical, convex, the edges soft, with the slender lamellæ slightly projecting toward the base; the lower mandible flattened, with the intercrural space long, moderately narrow, and bare, the unguis large, and elliptical.

The mouth is of moderate width; the anterior palate deeply concave, with about thirty-five slender lamellæ on each side; the lower mandible with about sixty. The tongue is an inch and a third in length, fleshy, papillate at the base, grooved above, laterally fringed, with a thin rounded tip. The œsophagus, seven inches and a quarter long, and two-thirds of an inch in width. The stomach, a strong muscular gizzard of a roundish, compressed form, an inch and a-half in breadth, with large tendons, and dense epithelium. The intestine is five feet long, rather wide; the cœca four inches in length, very narrow at the base, enlarging to a quarter of an inch.

The trachea, at first a quarter of an inch in breadth, presently enlarges to four-twelfths and a-half, and so continues for two inches, after which it contracts to two-twelfths and a-half, and again enlarges to five-twelfths and a quarter, terminating in a very large tympanum, seven-twelfths and a-half in length, an inch and two-twelfths in breadth, projecting on the left side with a rounded protuberance. The bronchi are of moderate length and width.

The nostrils are medial, elliptical, two-twelfths and a quarter in length. The eyes small, as are the apertures of the ears. The legs are very short, placed far behind; the tibia bare for four-twelfths of an inch; the tarsus compressed,

reticulate, with about twenty small, anterior scutella. The hind toe small, with twelve scutella, and a lobiform reticulate membrane; the anterior toes scutellate; the outer two about equal, and half as long again as the tarsus. The claws small, compressed, obtuse, that of the third toe dilated. The interdigital membranes emarginate.

The plumage is dense, soft, of moderate length, and blended; the feathers generally oblong. The wings are rather short, narrow, convex, and pointed; the primaries narrow, the outer two sinuate on the inner web; the first two-twelfths of an inch shorter than the second, the rest rapidly decreasing; the secondaries of moderate breadth, and rounded, the inner little elongated, rather pointed. Tail very short, graduated, of sixteen stiff, tapering feathers.

The bill is yellowish-brown; the iris reddish-brown; the feet light greyish-blue, with the membranes greyish-black, and the claws pale brown. From the base of the bill to the nape is a broad band of bluish-black, margined on each side behind with light red, before with white, continuous with a large patch of the same occupying the space between the eye and the bill. The sides of the head and the neck all round are purplish-blue. Behind the ear is a roundish white spot, and on each side of the neck a longitudinal band of the same. About the middle of the neck is a ring, and at its lower part a curved band of white, margined with black. The fore part of the back is light purplish-blue, the hind part darker, the rump black all round, with a white spot on each side at the base of the tail. The scapulars are for the most part white; the wing-coverts, alula, and primary coverts, are purplish-blue; the quills dusky brown, with reddish-brown shafts; the tips of the secondaries, and outer webs of the inner, white. The tail is brownish-black, tinged with grey. The fore part of the breast is purplish-blue; its hind part and the abdomen brownish-grey, the sides light red.

Length to end of tail 17 inches; extent of wings 26; wing from flexure $7\frac{3}{4}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{2}{12}$; its height at the base $7\frac{1}{12}$, its breadth $7\frac{1}{12}$, near the end $\frac{4}{12}$; tarsus $1\frac{0}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{1}{2}$, its claw $\frac{4}{12}$; third toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; fourth toe 2, its claw $\frac{2}{12}$.

FEMALE.—The female has the bill and feet dull greyish-blue; the iris brown. The general colour of the plumage is greyish-brown, darker on the upper part of the head, and hind part of the back, lighter on the fore neck, and mottled or barred with greyish-white on the breast. Before the eye is a brownish-white patch, and behind the ear a roundish-white spot.

Length to end of tail $15\frac{1}{2}$ inches; extent of wings 24; wing from flexure $8\frac{1}{4}$; tail $3\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$; tarsus $1\frac{1}{4}$; middle toe $1\frac{1}{2}$, its claw $\frac{4}{12}$.

HABITS.—This species, of which the adult male is a remarkably beautiful, and singularly variegated bird, while the female and young are almost as remarkable for the dullness of their tints, is described as of common occurrence on the eastern coasts of North America, breeding in suitable places, from the Bay of Fundy to the highest latitudes visited. It is said to be abundant in the north-eastern parts of Europe, and in the north of Asia, but to be seldom met with along the shores of our continent. Its food, consisting chiefly of mollusca, larvæ, insects, and crustacea, is obtained by diving. The nest, composed of dry plants, is lined with down, and the eggs, five or six in number, according to Mr. Audubon, measure two inches and a sixteenth in length, an inch and four-eighths and a half in breadth, their colour a uniform greenish-yellow.

A few instances of its occurrence in Britain are mentioned. Montagu first added it “to the list of British birds, on the authority of Mr. Sowerby, in whose collection of the more rare English birds,” he says, “we had an opportunity of examining both sexes, which were killed on the domain of Lord Seaforth in Scotland, a few years since, and presented to him by that nobleman.” It is also said to have been obtained in Orkney, at Yarmouth, in Devonshire, and in Cheshire.

YOUNG.—The young in their first winter resemble the adult female, having the upper parts of a sooty-brown, the lower of a lighter brown, undulated with greyish-white; the forehead and anterior part of the cheeks brownish-white.

PROGRESS TOWARD MATURITY.—The females have their colouring completed at the end of their first year ; but the males not until the fourth. In the second year the male has the upper parts of the body and wings greyish-brown, the lower parts brownish-grey ; the head and neck dull leaden-blue. The white patch before the eye is partially mottled with grey, as is the white band over the eye, and the occiput is margined with dull reddish-brown. The round white spot behind the ear, and the elongated white mark on the neck, are formed ; but the white collar is only indicated by markings on the tips of the feathers, and the band on the lower fore-neck by a patch on each side before the wing. There is a little white on some of the scapulars, but none on the secondary quills ; the primaries and tail-feathers are greyish-brown ; the upper tail-coverts black.

In the third year the tints approximate to those of the adult bird ; the white markings on the neck are edged with black ; the upper parts are dull greyish-blue, the lower paler ; the sides tinged with red.

REMARKS.—In this species the bill is proportionally narrower, and has the unguis much larger than in *Clangula chrysophthalma*. In the latter respect it more resembles the next genus, with which it might with equal propriety be associated. In fact, were differences not greater in degree than those assumed as indicative of generic distinction among the Land Birds, to be considered as of equal validity among the *Cribratores*, almost every species would make a genus.

CLANGULA CHRYSOPTHALMA. THE GOLDEN-EYED GARROT.

GOLDEN-EYED DUCK. GOWDY DUCK. PIED WIGEON. WHISTLER.



FIG. 71.

Anas Clangula. Linn. Syst. Nat. I. 201.

Anas Clangula. Lath. Ind. Ornith. II. 867.

Anas Glaucion. Linn. Syst. Nat. I. 401. Female and Young.

Anas Glaucion. Lath. Ind. Ornith. II. 888. Female and Young.

Golden-eye. Mont. Ornith. Dict. and Suppl.

Canard Garrot. Anas Clangula. Temm. Man. d'Ornith. II. 870.

Common Golden-eye Garrot. Clangula vulgaris. Selby, Illustr. II. 367.

Clangula Chrysophthalmus. Golden-eye Garrot. Jen. Brit. Vert. An. 245.

Clangula Glaucion. Bonap. Comp. List, 58.

Male about nineteen inches long, with the bill black, an inch and a third in length, with the frontal sinus acute; the head and upper neck glossy deep green, with purple reflections; a large ocate white spot on each side between the cheek and the bill, below the level of the eye; the lower neck all round, with the breast, sides, and abdomen, white, the elongated feathers of the latter edged with black; upper parts

black; the outer scapulars white, some of them edged with black; on the wing a large undivided transverse white space, including many of the smaller coverts, some of the secondary coverts, and eight secondary quills; feet orange, webs dusky. Female much smaller, with the bill brown, toward the end yellowish; the head and upper neck dull reddish-brown, the lower neck grey, the upper parts grey, darker behind, the lower white, but with the sides and part of the abdomen brownish-grey, seven of the secondary quills and their coverts white, feet yellowish-brown. Young similar to the female, but with the bill and feet darker, as are the tints of the plumage; the white on the wing traversed by a band of dusky, the tips of the white secondary coverts being of that colour.

As differences of opinion exist respecting this bird, some asserting that three distinct species are confounded under the common name of Golden-eyed Duck or Garrot, while others maintain that these three alleged species are merely varieties dependent upon age or season, I may with propriety premise that my descriptions will be taken exclusively from specimens obtained in Scotland, where individuals are sufficiently common in winter and spring to enable one to institute as extended an examination as he may desire. I shall afterwards refer to specimens procured in England, the north of Europe, Greenland, and North America.

MALE IN WINTER.—The body of this bird is full, compact, ovate, depressed; the neck rather short and thick; the head large, oblong, compressed, and rounded above. The bill is shorter than the head, much higher than broad at the base, gradually depressed, and with its breadth moderately diminished to the end, which is rounded. The upper mandible has the lateral sinuses broad and rounded; the upper sinus rather wide, but pointed; the basal angles moderate and acute; the dorsal line straight and sloping to beyond the middle, then nearly direct, and finally decurved on the unguis, which is oblong, decurved, and strong-edged; the ridge flattened, broad, generally narrowed, toward the end

convex ; the sides erect at the base, gradually sloped and convex ; the edges marginate or grooved, soft, projecting a little beyond the lamellæ, of which there are about thirty above ; the nasal sinus large, elliptical, sub-medial, close to the ridge ; the lower mandible with the intercrural space very long, of moderate width, and bare ; the crura a little rearcuate at first, then nearly straight ; the edges with about thirty-five external and forty-five upper lamellæ ; the unguis obovate.

The nostrils are linear-oblong, two-and-a-half-twelfths in length, medial ; the eyes of moderate size. The legs are very short, and placed rather far behind ; the tibia bare to a very small extent ; the tarsus compressed, reticulate, but with an anterior series of twenty-six medial and nine outer small scutella. The hind toe is very slender, with fifteen scutella, and a lobiform thick scaly membrane ; the anterior toes long, the inner with forty-two scutella, and a two-lobed free membrane ; the third nearly double the length of the tarsus, with forty-six scutella ; the fourth almost of the same length, with sixty scutella ; the interdigital membranes full, the outer a little emarginate. The claws are small, slender, compressed, little arched, rather blunt, the third with its inner edge a little dilated.

The plumage is dense, soft, and blended. The feathers on the cheeks and fore part of the head very small, oblong, on the upper and hind part of the head, as well as on the hind part and sides of the upper neck, linear, elongated ; on the fore part and middle of the neck short ; on the body moderate, oblong, and rounded ; on the sides elongated and pointed ; the scapulars also long, but obtuse. The wings are short, convex, narrow, and pointed ; the outer primaries very narrow, the second longest, the first scarcely shorter, the rest rapidly graduated ; the secondaries incurved and rounded, the inner elongated. The tail is short, graduated, of sixteen stiffish rounded feathers, of which the medial exceed the lateral by an inch and a half.

The bill is black ; the iris yellow ; the feet orange-yellow, with the webs dusky, the claws brownish-black. The head and upper part of the neck are glossy deep green, when seen

in a light reflected at a small angle, but otherwise purple; the throat brownish-black. Between the lateral basal sinus of the upper mandible and the cheek is an ovate patch of white, an inch in its greatest diameter, and ten-twelfths across. The lower neck all round, the breast, fore part of the abdomen, sides, and lower tail-coverts white; but the axillar feathers and lower wing-coverts are blackish-brown, and the edges of the posterior elongated feathers on the sides black. The back, and the inner and posterior scapulars, are black; the outer scapulars white, with the margins black. The tail is deep brown tinged with grey; the sides of the rump and tibiæ dusky-grey, and the feathers on the hind part of the abdomen dusky at the base. The wing may be described as brownish-black, with a large patch of white, which includes many of the small coverts, several of the secondary coverts, and eight of the secondary quills. These white secondary coverts have their basal half black, but that colour is not apparent when the feathers are laid.

The mouth is of moderate width; the anterior palate concave; the lateral lamellæ broad, depressed, tapering outwards to a point. The tongue, an inch and a half in length, and half an inch in breadth, is fleshy, with a double row of conical papillæ at its base, a deep broad medial groove, the edges thin, posteriorly serrate, anteriorly lamellate, the free part beneath broad, soft, and flattened, with a medial and two lateral prominent lines, the tip thin, cartilaginous, semi-circular. The space between the base of the tongue and the glottis, the edges, and a space on each side of the latter, as well as a large pad behind, divided by a deep groove, covered with conical horny papillæ, directed backwards. The œsophagus eleven inches long, ten-twelfths wide at the commencement, contracts to eight-twelfths, and, in entering the thorax to half an inch, then enlarges a little. Its walls are thick, and the proventriculus, which is an inch and a half long, has its glandules cylindrical or oblong. The stomach is large, transversely elliptical, little compressed, two inches two-twelfths in breadth, an inch and a half in length, placed obliquely, with very large muscles, three fourths of an inch in thickness, large tendons, a dense middle coat, and thick,

longitudinally rugous epithelium. The intestine, five feet eight inches long, varies in width from six-twelfths to four-twelfths, and enlarges a little toward the cæca, which are three inches and a half in length, and nearly a quarter of an inch in width, unless at the base. The duodenum turns at the distance of four inches and a half from the pylorus; the rectum is four inches and a half in length; and the intestine makes sixteen turns.

The trachea, which, moderately extended, is nine inches long, has two enormous dilatations, one about the middle, the other at the lower end. For four inches, its width is four-twelfths-and-a-half; and in this part the rings, which are sixty in number, are narrow and cartilaginous. It then, being extended, forms an oblong expansion two inches and a half in length, and for an inch and a half one inch in breadth. This part, which is composed of thirty thin, flattened, osseous rings, narrowed behind, and placed obliquely, is shortened and collapsed when the bird's neck is contracted, the rings passing within each other, so as to form an obliquely-flattened expansion, which at first one could scarcely conceive to be capable of being extended into so large a cavity. It then contracts to the width of five-twelfths, and in this part has sixteen bony flattened rings, which are narrowed and little ossified behind; but below this the rings, twenty-five in number, become united, and gradually expand into an irregular cavity, curving toward the right side, and having anteriorly a broad, thin, bony frame, posteriorly a membrane partly ossified. At its lower part this apparatus has in front a large prominent bony rim, which winds upwards to the left side, and ends at the bronchus. The greatest breadth of this enormous tympanum is an inch and seven-twelfths. The bronchi, which are separated to the distance of an inch, are very large, with twenty rings, of which all are cartilaginous except the first. The left bronchus, which is longer and wider, has its rings complete, while the ends of those of the other do not meet.

Length to end of tail 19 inches; extent of wings 32; wing from flexure 9; tail 4; bill along the ridge $1\frac{5}{12}$, along the edge of lower mandible $1\frac{10}{12}$; tarsus $1\frac{5}{12}$; hind toe $\frac{7}{12}$, its

claw $\frac{3}{12}$; second toe $1\frac{0}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{5}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{7}{12}$, its claw $\frac{3}{12}$.

FEMALE IN WINTER.—The female, which is much smaller, has the bill less stout, the feathers of the head less elongated and less glossy, as are the scapulars and the feathers of the sides. The bill is light brown, yellowish on the ridge toward the end, with the upper unguis dusky, the lower yellowish-brown. The tarsi and toes are of a dingy yellowish-brown, the interdigital membranes dusky, the claws brown. The head and upper neck are umber-brown; the lower neck all round dull ash-grey, the feathers terminally edged with paler. The lower parts are white; but the sides of the body and rump, with part of the abdomen, are grey; the axillars and lower wing-coverts brownish-grey. The back and scapulars are deep ash-grey, but on the hind part of the back that colour shades into black. The tail dark brown, tinged with grey. The smaller wing-coverts are deep grey, many of them tipped with pale grey. The primaries, their coverts, four outer secondaries and five inner, with their coverts brownish-black, the seven other secondaries pure white, as are their coverts, unless at the base.

Length to end of tail 16 inches; extent of wings 28; wing from flexure $8\frac{1}{4}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{3}{12}$; tarsus $1\frac{1}{4}$; hind toe $\frac{7}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{7}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{2}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{2}{12}$, its claw $\frac{4}{12}$.

The tongue an inch and four-twelfths long. The œsophagus nine inches and a half in length, at first nine-twelfths wide, contracting to five-twelfths, then for nearly four inches eight-twelfths, in entering the thorax four-twelfths; but the proventriculus seven-and-a-half-twelfths in breadth, and an inch and a half in length. The stomach is an inch and a half in length, nearly two inches in breadth; its articular lining with irregular longitudinal fissures. The intestine is five feet four and a half inches long, its width half an inch, but about the middle less; the rectum four inches and a half in length, and eight-twelfths in width; the cœca three inches and a half in length, at their lower parts two-and-a-half-

twelfths in width, but toward the end enlarged to four-twelfths, and rounded.

VARIATIONS.—In adult individuals examined in winter, the differences are not generally very remarkable. The males differ considerably in size, from eighteen to twenty inches in length, from thirty to thirty-four in extent of wing. The bill is stouter, higher, and broader at the base, apparently in proportion to the age of the individual. The feathers of the head are much longer in some than in others; and in some the first quill is longer than the second, in others equal, but generally, I think, the second is the longest. The green feathers extend farther down the neck in some than in others, there being a difference of an inch in this respect. The white spot on the fore part of the cheek varies in form from roundish to oval, or even oblong. Although the large white space on the wing is continuous in all the specimens which I have seen excepting one, it is in it divided by a transverse narrow black band. In that individual, shot late in spring, the feathers are considerably worn on the neck, and the partial appearance of the black of the white-tipped secondary coverts seems to be owing to the abrasion of the tips of the white feathers lying over them. Females differ somewhat in size, and slightly in colour. The intestinal canal varies some inches in length in both sexes, and the enlargements of the trachea may be more or less ossified, and are variable in extent, though not so much in form.

HABITS.—I have not met with individuals of this species beyond the beginning of May, although I have then seen them in pairs in the Island of Harris, always on small fresh-water lakes; nor does it appear that any have hitherto been found breeding in Scotland, or even in the Shetland Islands. Like most of our Ducks, they betake themselves to the arctic regions, whence they return in autumn, making their appearance in the beginning of October, and continuing to increase in number until the winter has fairly set in. During winter they are met with in all parts of the country, from Shetland and Orkney on the one side, and the Lewis Islands on the

other, to the southern extremity of England. In Ireland, also, according to Mr. Thompson, they are regular winter visitants. It is chiefly to lakes, pools, and rivers, that they resort, generally in small flocks, but sometimes in great numbers; and their food consists principally of the larvæ of aquatic insects, for which they dive in the clear water. In most of the individuals which I have examined, the gizzard contained some of the larvæ, of a whitish or greenish colour, with a dusky case, intermixed with sand and small fragments of quartz; and I have seen the whole intestinal tube filled with the cases of these larvæ, in the same manner as that of a gallinaceous bird is filled with the undigested ligneous parts of its food. In such instances sand is usually mixed with the refuse, but not the fragments of quartz, although the pylorus is wide, and has no valve. They also feed on small fresh-water mollusca; but I have not observed any vegetable substances in their œsophagus or stomach, beyond a few flies, which perhaps might have been swallowed accidentally. In one instance I have seen remains of small fishes in the gizzard. But, although essentially lake Ducks, they often, especially in frosty weather, resort to estuaries, as well as the open coasts, where they procure testaceous mollusca, crustacea, and fishes. Their flesh is very dark coloured, and although savoury, not at all pleasant, unless its natural fishy flavour be concealed by arts known to the cook and the epicure. Yet they are generally plentiful in our markets, but especially the young and females, which go under the comprehensive name of Wigeons.

Owing to the pied appearance of the males, the Golden-eyes make a fine show on the water, and especially on those dull dark pools of the north Highlands and Hebrides, of which the surrounding scenery is dismal enough at all seasons, but especially in winter. When undisturbed they float lightly; but if alarmed, have the faculty of sinking deeper. They swim with great speed, dive instantaneously, and are active and lively in all their movements, unless, as some say, when on land, where however I have never seen them walking. They fly with rapidity, in a direct manner, their small, stiff, sharp-pointed wings, producing a whistling sound, which in

calm weather may be heard at a considerable distance. At night they repose chiefly on the water, but sometimes on points of land. If shot at while feeding, they dive, and appear after a considerable interval, at a great distance ; but owing to their vigilance and activity, it is difficult to get near them, although, when without a gun, I have several times been allowed to approach within shooting distance, and on such occasions they merely swim slowly away. In rising from the water, they strike it with their feet and wings, to the distance of several yards, but, on occasion, they can rise at a single effort, especially when there is a breeze.

The young and females of this species are greatly more numerous, in proportion to the males, in the southern parts of the country, and in the northern flocks are sometimes seen, composed entirely of males. It is said that in their southward migration the males advance first, the young remaining a considerable time behind the females, and in proceeding northward the males again take the lead, being several days in advance. The nest is described as being formed of grass and herbage, and placed on the ground, or sometimes in crevices of rocks, as well as holes in trees. The female plucks the down from her breast to cover the eggs, which are numerous, elliptical, smooth, and of a greenish tint.

YOUNG.—When the young arrive in Britain they resemble the female, differing only in having the upper parts darker, the brown on the head of a deeper tint, the greyish-brown more extended on the abdomen, and including the lower tail-coverts, which are white in the adult female, many of the feathers on the hind part of the breast being very slightly tipped with brown. Seven of the secondary quills are white, as in the adult, as are their coverts, of which the tips, as well as the bases, are black. The bill and feet are also darker than in the adult female. Young males are distinguishable by their greater size and darker tints.

PROGRESS TOWARD MATURITY.—The young females undergo little change. The males in the second year have their dark parts of a deeper tint, the head and upper neck glossy

black, tinged with green; the lower neck white; white feathers intermixed with black before the eyes; a white patch on the wing, but variegated with black, the tips only of the feathers being of the former colour. In the next stage the feathers of the head are elongated, and the colours nearly completed; but the white less extended on the scapulars and wings; the tips of the white secondary coverts being also still dusky.

REMARKS.—On comparing British with European, and both with American skins, I am unable to detect any essential difference, individuals from the one continent differing from individuals from the other only in the same degree as British specimens differ from each other. I have also examined the digestive and respiratory organs of an American adult male, and find them to correspond with those of the many British males which I have dissected. On what grounds the Prince of Canino institutes an American species, *Clangula Americana*, differing from our *Clangula chrysophthalma*, or *C. Glaucion*, as he names it, I, of course, cannot conjecture.

The specimens described by Dr. Richardson or Mr. Swainson, in the *Fauna Boreali-Americana*, under the name of *Clangula Barrovii*, present no other differences, that are not met with in undoubted specimens of *Clangula chrysophthalma*, than that of having a semilunar white band before the eye, in place of an ovate or oblong band, and a transverse black band on the white of the wing, arising either from the shortening of the white feathers covering the black-based secondary coverts, or from the elongation of the black upon these latter. Now, all the specimens hitherto obtained, and they are very few in number, have been killed in summer; and whether the oval spot on the head be at that season usually converted into a crescent-shaped spot, or whether the individuals described are merely such as have the spot of an unusual form, or lastly whether the crescent-spotted birds really form a species distinct from those with roundish, oval, or oblong spots, I think can be determined only by more extended observation of the Garrots in their summer haunts.

Mr. Audubon considers *Clangula Barrovii* as *C. chrysophthalma* in summer; but to this opinion it may be objected that the latter has been found at that season with its white spots the same as in winter. In my opinion these crescent-spotted individuals are young males in their second or third year. All their alleged distinctive characters seem to me to countenance this idea. The bill is said to be shorter and narrower, as it surely would be in a young bird; the head is glossed with purple in place of green, as we see to be the case in very many birds, Quiscali, Icteri, and Swallows, for example, toward the end of summer; the black bar on the wing may depend upon the abrasion of the tips of the coverts; the black tips of the posterior lateral feathers I have seen in many individuals of the common kind; there being fewer of the small wing-coverts white indicates apparently that the individual is young; and the crescentic white spot differs from the common form only in having the upper part elongated.

The enormous enlargements of the trachea in the male of this species, seems to indicate an affinity to the Mergansers, which is moreover somewhat apparent in the form and habits of the bird; but of what use they can be in the economy of the individual, it seems in our present state of knowledge impossible to discover. They cannot have reference to diving, or the retention of the breath, as they do not exist in the female, which dives as well and as long as the male. We may conjecture that they refer to the voice, both in this and the other ducks and mergansers. In those species, the Geese and Swans, in which the males do not differ from the females in the form of the windpipe, the voice is the same in both sexes; but in birds like this, the voice of the male is more raucous and less loud than that of the female. Dr. Latham errs when he remarks, "whatever share the structure of this singular kind of trachea may have in promoting the loudness of the voice, I will not here insist on; but it is notorious that the cry is heard further off than many others of the genus." Now, the cry of this bird is a mere grunting croak, and is never heard to any considerable distance; and the epithet *clangula* given to it by the earlier ornithologists had reference not to its voice, but to the whistling of its wings.

CLANGULA ALBEOLA. THE BUFFEL-HEADED GARROT.

BUFFEL-HEADED DUCK. SPIRIT DUCK. MARIONETTE.

Anas Albeola. Linn. Syst. Nat. I. 199.

Anas Albeola. Lath. Ind. Ornith. II. 867.

Fuligula Albeola. Audub. Ornith. Biogr. IV. 217.

Clangula Albeola. Rich. and Swain's Fauna Bor. Amer. II. 458.

Clangula Albeola. Buffel-headed Garrot. Jen. Brit. Vert. Anim. 246.

Clangula Albeola. Bonap. Comp. List, 58.

Bill light greyish-blue ; feet pale flesh-colour ; head and upper neck deep green and bluish-purple, with a broad white band from one cheek to the other over the occiput ; upper parts black ; lower neck, breast and abdomen, outer scapulars, and a large patch on the wing, white, Female much smaller, with the bill darker, the feet greyish-blue, the membranes dusky ; head, upper and hind parts of neck, back, and wings greyish-brown ; lower parts white.

THIS species, smaller than the Golden-eyed, but much resembling it in general aspect, though easily distinguishable, has only in two instances been detected as occurring in Britain, one individual having been procured at Yarmouth, the other in Orkney. In North America it is very plentiful and extensively dispersed, and it is from specimens obtained there that the following description is taken :—

MALE.—Body full, compact, depressed ; neck short and thick ; head rather large, compressed, rounded above. Bill much shorter than the head, higher than broad at the base, gradually depressed and with its breadth moderately diminished to the end, which is rounded. The upper mandible has the lateral sinuses broad and rounded, the upper sinus

rather wide but pointed, the basal angles short and acute, the dorsal line straight and sloping to beyond the middle, then nearly direct, and finally decurved on the unguis, which is oblong, decurved, and strong-edged; the ridge broad and flat at the base, gradually narrowed, toward the end convex, the sides erect at the base, gradually sloped and convex, the edges soft, marginate, projecting a little beyond the lamellæ, of which there are about thirty-five; the nasal sinus large, elliptical, submedial, close to the ridge; the lower mandible with the intercrural space very long, of moderate width, and bare; the edges with about forty external and fifty upper lamellæ; the unguis broadly elliptical.

The nostrils are linear, pervious, two-twelfths long, medial; the eyes of moderate size. The legs very short, and placed rather far back; the tibia bare to a very small extent; the tarsus compressed, reticulate, but having anteriorly in its whole length a series of small scutella, and above the outer toe a few broad scales. Hind toe very small, with a thick lobiform membrane; anterior toes long, the inner with a two-lobed marginal membrane; the third and fourth about equal and nearly double the length of the tarsus; the interdigital membranes with a sinus on their free margin. The claws are small, slender, compressed, little arched, obtuse, that of the third toe with the inner edge a little dilated.

The plumage is dense, soft, and blended. The feathers on the fore part of the head very small and rounded, on the upper and hind parts linear and elongated, as they also are on the lateral and hind parts of the upper neck, so that when raised they give the head an extremely tumid appearance; on the fore part and middle of the neck short; on the body moderate, oblong, and rounded; on the sides elongated and pointed; the scapulars also long, but obtuse. Wings very small, decurved, pointed; the outer primaries pointed, the first longest, the rest rapidly graduated; the secondaries incurved, obliquely rounded, the inner much elongated and pointed. The tail is short, graduated, of sixteen stiffish feathers.

Bill light greyish-blue. Feet pale flesh-colour, with the

webs dusky, the claws brownish-black. The head and upper part of the neck seem black, but the fore part of the head is deep green, the upper bluish-purple, as are the fore part and sides of the neck, while its hind part is deep green. A broad band of white, which extends from one cheek over the occiput to the other. The rest of the neck, the lower parts, the outer scapulars, and a large patch on the wing, including the greater part of the smaller scapulars, and some of the secondary coverts and quills, pure white, the scapulars narrowly margined with black, as are the inner feathers of the sides under the wings. The back, inner scapulars, and inner secondary quills velvet-black. The feathers on the anterior edge of the wing are black, narrowly edged with white; the primary quills and their coverts black; tail-feathers brownish-grey, with the edges paler and the shafts dusky.

Length to end of tail 15 inches; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{5}{12}$; wing from flexure $6\frac{10}{12}$; tarsus $1\frac{3}{12}$; hind toe and claw $\frac{8}{12}$; third toe 2, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female, which is much smaller, has the bill less stout, the feathers of the head less elongated, as are the scapulars and the feathers of the sides. The bill is blackish-grey; the feet dull greyish-blue, the membranes dusky. The head, upper and hind parts of the neck, the back, and wings are greyish-brown. There is a short transverse white band from beneath the eye, and a slight speck of the same on the lower eyelid. Six of the secondary quills are white on the outer web. The tail dull greyish-brown. The lower parts are white, the sides light greyish-brown.

Length to end of tail 13 inches; bill along the ridge $1\frac{1}{12}$; wing from flexure $6\frac{1}{2}$; tarsus $1\frac{2}{12}$; third toe $1\frac{0}{12}$, its claw $\frac{4}{12}$.

HABITS.—To study the habits of this species it would be necessary for us to betake ourselves to America, where it is said to be very common. Mr. Audubon's account of them is

to the following effect :—" In autumn and winter this beautiful miniature of the Golden-eyed Duck is generally dispersed over the United States, whence it returns northward from the beginning of March to the end of May. It does not breed within the limits of the Union, nor, as it appears, in Labrador or Newfoundland. During the periods of their movements toward the north, I found them exceedingly abundant on the waters of the Bay of Fundy, the males in flocks and in full dress, preceding the females about a fortnight, as is the case with many other birds. The Marionette—and I think the name a pretty one—is a very hardy bird, for it remains at times during extremely cold weather on the Ohio, when it is thickly covered with floating ice, among which it is seen diving almost constantly in search of food. When the river is frozen over they seek the headwaters of the rapid streams, in the turbulent eddies of which they find abundance of food. Possessed of a feeling of security arising from the rapidity with which they can dive, they often allow you to go quite near them, though they will then watch every motion, and at the snap of your gun, or on its being discharged, disappear with the swiftness of thought, and perhaps as quickly rise again within a few yards, as if to ascertain the cause of their alarm. Their flight is as rapid as that of our Hooded Merganser, for they pass through the air, by regularly repeated beats of their wings, with surprising speed; and yet this is the best time for the experienced sportsman to shoot them, as they usually fly low. Their note is a mere croak, much resembling that of the Golden-eye, but feebler. At the approach of spring the males often swell their throats, and expand the feathers of the head, whilst they utter these sounds, and whilst moving with great pomposity over the waters. When these birds return to us from the north, the number of the young so very much exceeds that of the old, that to find males in full plumage is much more uncommon than toward the time of their departure, when I have thought the males as numerous as the females. Although at times they are very fat, their flesh is fishy and disagreeable. Many of them, however, are offered for sale in our markets. Their food is much varied, according to

situation. On the sea-coast or in estuaries they dive after shrimps, small fry, and bivalve shells; and in fresh water they feed on small crayfish, leeches, and snails, and even grasses."

Only three instances, at the most, are known of its capture with us. Donovan inserted it in his *British Birds*, though without mentioning any authority. One was shot near Yarmouth, in the winter of 1830. In the autumn of 1841, a specimen was obtained in Orkney, by Mr. Mummery, curator of the Museum of Natural History at Margate.

HARELDA. HARELD.

I AM acquainted with only one species of this genus, to which the name of Harelda has been given by Leach and others, apparently a misprint of Havelda or Haveld, which is said to be the Icelandic appellation of this bird. Imagining in my simplicity that the use of barbarous names for genera, however well they may answer for species, ought to be according to acknowledged rules rejected, and considering that it is a peculiarly arctic bird, nestling "sur les bords de la mer glaciale," and in winter merely keeping on the limits of extreme cold, I thought that Crymonessa, compounded of *κρυμος*, ice, and *νησσα*, duck, might be as good a generic name as could be found for it. For the present, however, I follow the multitude. The body is full and depressed; neck rather short; head moderate, oblong, compressed, rounded above.

Bill much shorter than the head, of the same height and breadth at the base, toward the end narrowed; upper mandible with the frontal angles obsolete, the dorsal line sloping, the ridge broad at the base, the unguis large, roundish, convex, decurved, the laminæ projecting considerably beyond the margin; lower mandible with the intercrural space long and narrow, the outer laminæ prominent, the unguis broadly elliptical, little convex.

The tongue fleshy, thick, medially grooved, papillate at the base, laterally ciliated, with the tip thin and rounded. Œsophagus rather wide. Stomach roundish, very muscular, with rugous epithelium, having the grinding plates roundish. Intestine of moderate length and width; cœca rather long; rectum very short.

Trachea gradually narrowed, at the lower part expanded, having six rings extremely narrowed before, with a transversely oblong tympanum, membranous in front.

Nostrils large, oblong, sub-basal. Eyes rather small.

Legs very short, and placed far behind ; tarsus compressed, with anterior small scutella. Hind toe very small, with a lobiform membrane ; outer toes equal, and about double the length of the tarsus ; membranes full ; claws small, slender, little arched.

Plumage firm, blended ; the feathers moderate and oblong ; scapulars and middle tail-feathers much elongated and tapering in the male, wings short, convex, acute ; the first and second quills about equal and longest ; tail small, of fourteen feathers.

This genus appears to be more nearly allied to *Clangula* than to any other. The form of the trachea indicates an affinity to the Mergansers. The only known species is entirely marine, unless in the breeding season, and feeds on bivalve shell-fish, asteriæ, and crustacea.

HARELDA GLACIALIS. LONG-TAILED HARELD.

LONG-TAILED DUCK. SHARP-TAILED DUCK. CALLOO. COAL-AND-CANDLE-LIGHT.

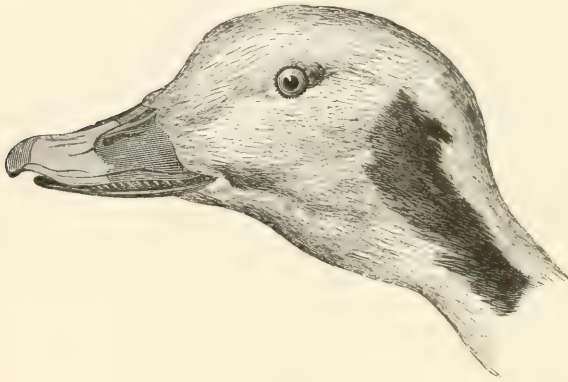


FIG. 72.

Anas glacialis. Linn. Syst. Nat. I. 203. Winter.

Anas hyemalis. Linn. Syst. Nat. I. 202. Summer.

Anas glacialis. Lath. Ind. Ornith. II. 864.

Long-tailed Duck. Mont. Ornith. Dict. and Suppl.

Canard de Mielon. *Anas glacialis*. Temm. Man. d'Orn. II. 860.

Long-tailed Hareld. *Harelda glacialis*. Selby, Illust. II. 363.

Harelda glacialis. Long-tailed Hareld. Jenyns, Brit. Vert. Anim. 247.

Harelda glacialis. Bonap. Comp. List, 59.

Male with the two middle tail-feathers extremely narrow, elongated, and somewhat recurvate ; female with the tail very short and rounded. Male in winter with the bill black in its basal half, red toward the end, with the unguis black ; the feet dull orange-red ; the head and neck white ; the cheeks grey ; an oblong black and brown patch on each side of the neck ; the fore part of the breast, the back, wing-coverts, and elongated tail-feathers, blackish-brown ; the quills dark

brown ; the scapulars and lower parts white ; the tail-feathers chiefly white. Female with the bill deep bluish-grey ; the feet reddish-brown ; the upper part of the head and nape chocolate-brown ; the sides of the head and neck, and middle part of the hind-neck, white ; the throat, an oblong patch on the sides of the neck, and the lower neck, all round, greyish-brown ; the lower parts white ; the upper deep chocolate-brown ; the tail brownish-grey. Male in summer with the upper part of the head and nape brownish-black ; the sides of the head greyish-white ; the neck all round, and the fore part of the breast, dark chocolate-brown ; the back and wing-coverts brownish-black ; the scapulars margined with reddish-brown.

MALE IN WINTER.—This beautiful and lively inhabitant of the northern seas has the body compact, rather elongated, and considerably depressed ; the neck rather short, and of moderate thickness ; the head oblong, compressed, rounded above, and with the forehead convex.

The bill is much shorter than the head, of about the same height and breadth at the base, gradually depressed and narrowed toward the end, which is rounded ; the upper mandible with the basal sinus bounded by a line ascending obliquely to near the nostril, the upper sinus broadly rounded, the frontal angles obsolete, the dorsal line descending and straight to the unguis, which is large, roundish, convex, and decurved, the ridge broad and flattened to beyond the nostrils, the sides convex, the edges soft, marginate, with the pointed lamellæ projecting a little, the marginal line nearly straight, toward the end ascending and rounded, the nasal sinus oblong, sub-basal ; lower mandible with the intercrural space long, narrow, half bare, the crura little convex, the outer laminæ very prominent, the unguis large, broadly elliptical, little convex.

The mouth is of moderate width ; the anterior palate concave, with a papillate median ridge, and on each side about thirty-five short lamellæ, of which the outer ends are pointed, and project considerably. The tongue is an inch and five-twelfths long, fleshy, grooved along the middle,

papillate at the base, and with two lateral series of filaments. The œsophagus is eight inches long, eight-twelfths in width, dilated at the lower part of the neck to an inch. The stomach is large, roundish, an inch and ten-twelfths in length, two inches and two-twelfths in breadth, with the lateral muscles nearly an inch in thickness; the epithelium dense, slightly rugous, with thick grinding plates. The intestine is five feet eight inches long, four-twelfths in width; the cœca four inches and ten-twelfths in length, three-twelfths in breadth; the rectum only two inches and a quarter long.

The nostrils are oblong, direct, sub-basal, large, near the ridge, a quarter of an inch in length. The eyes rather small. The aperture of the ear small. The legs are very short, and placed far behind; the tarsus very short, compressed, with about twenty anterior scutella. The hind toe is very small, with a lobiform membrane, and about fifteen scutella; the second toe with a two-lobed expanded marginal membrane, and eighteen scutella beyond the second joint; the third toe with thirty-eight, the fourth with fifty-six; the outer toes equal, and about twice the length of the tarsus; the interdigital membranes full. The claws are small, slightly arched, slender, rather blunt.

The plumage is dense, elastic, firm, and blended; the feathers rather small and oblong, those on the upper part of the head and nape rather elongated. The scapulars are elongated and acuminate, the posterior curved outwards. Wings short, narrow, convex, pointed; primary quills tapering, stiff, the second longest, but barely exceeding the first; secondaries rounded, the inner rather broad, but pointed. The tail is small, of fourteen pointed feathers, of which the two medial are extremely attenuated, a little recurved, with their webs decurved. These feathers exceed the next by four-twelfths, and the lateral by six inches.

The basal half of the bill is black, the rest orange-red, but with the unguis black. The iris red. The tarsi and toes dull yellow; the membranes dusky; the claws black. The forehead and cheeks are ash-grey; the upper part of the head yellowish-white; the neck white, with a large oblong patch on each side, of which the anterior part is blackish-brown.

The posterior yellowish-brown. The breast, back, wing-coverts, and inner secondaries, are deep chocolate-brown; the quills greyish-brown; the scapulars white. The middle tail-feathers, like the back, the next pair partially so, being margined with white, the rest chiefly white. The hind part of the breast, abdomen, and lower tail-coverts, are white; part of the sides ash-grey; the lower wing-coverts greyish-brown.

Length to end of tail 25 inches; extent of wings 30; wing from flexure $9\frac{1}{4}$; tail $8\frac{1}{2}$; bill along the ridge $1\frac{2}{12}$; along the edge of lower mandible $1\frac{7}{12}$; its greatest breadth at the base $\frac{9}{12}$; bare part of tibia $\frac{4}{12}$; tarsus $1\frac{3}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{7}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{11}{12}$, its claw $\frac{4}{12}$; fourth toe $2\frac{1}{12}$, its claw $\frac{3}{12}$.

FEMALE IN WINTER.—The scapulars are not elongated, and the tail is short and rounded. The bill is deep bluish-grey; the iris yellow; the feet greenish-grey. The upper part of the head and nape are chocolate-brown; the throat of a lighter brown; the sides of the head and neck, with a band over the eye, and part of the hind-neck greyish-white; a brown patch behind the cheek. On the lower part of the neck, all round, the feathers are greyish-brown, edged with paler. The rest of the lower parts white, excepting part of the sides, which is greyish-brown; the lower wing-coverts light chocolate brown. All the upper parts are greyish chocolate-brown; the scapulars edged with light brown; the lateral tail-feathers shaded with greyish-white.

Length to end of tail 16 inches; extent of wings 26; wing from flexure 8; tail $2\frac{1}{2}$; bill along the ridge $1\frac{2}{12}$; tarsus $1\frac{2}{12}$; middle toe $1\frac{8}{12}$, its claw $\frac{3}{12}$.

HABITS.—The Long-tailed Ducks inhabit the arctic regions of both continents, in summer extending to the margins of the polar ice, and in winter moving southward along the coasts, but not advancing far into the temperate regions. M. Temminck states that they nestle in Spitzbergen, Iceland, and the Hudson's Bay country, on the borders of the sea. Mr. Audubon found them breeding in Labrador, and describes the nest as formed of grass, lined with down. The eggs are

from six to eight, of a broad oval form, from an inch and eleven-twelfths to two inches and a twelfth in length, and generally an inch-and-a-half in breadth; when recent of an asparagus green colour, approaching to apple-green, with the shell smooth. Young birds caught by the ornithologist above-named in Labrador, were covered with stiffish down, and had the upper parts chocolate brown, a small spot of white under the eye, the throat and lower parts whitish, as well as an oblong patch on the cheek.

Among the northern islands of Scotland, and along the coasts of the mainland, these birds make their appearance in October, in small flocks, which gradually enlarge by the accession of new families. Many remain all winter in these parts, while others advance southward. In the Firths of Clyde and Tay, they are not usually very uncommon, and Mr. Selby informs us that a few appear on the coast of Northumberland. They have been seen, however, on most parts of the coast of England. On that of Ireland it occurs "in very limited numbers." M. Temminck describes them as often occurring on the coasts of Holland, though not in bands, and on those of France in still smaller numbers, while the young have been found even in the Adriatic. The extent of their equatorial migration in Europe is, however, exceeded by their range in America, where some proceed, according to Mr. Audubon, as far as the mouth of the Mississippi. Although in autumn they generally arrive in small bands, and in winter are often found scattered solitarily or in pairs, they advance northward in spring in large bodies, generally flying in extended lines. At this season large flocks occur in the seas of the outer Hebrides, where they are hailed by the natives as the harbingers of summer, their loud cries rendering them familiar.

I have had good opportunities of observing the habits of these birds. In the Bay of Cromarty, where they are very common, it is pleasant to see them in small flocks scattered over the water. They are most expert swimmers, and like many other species of this family, live on bivalve shell-fish and crustacea, which they obtain by diving in shallow or moderately deep water. In small flocks, in which there are

two or three males, they may be seen reposing on the open seas, or in the bays at high water. Should a boat approach them they begin to move about in different directions, or plunge and reappear at a distance, seldom allowing one to get within shooting distance; but when at their feeding grounds they permit a nearer approach, so as to be shot without difficulty. The male in swimming raises his tail obliquely, in rough water almost erects it, and is remarkable for the grace and vivacity of his movements. Their flight is rapid, direct, and generally performed at the height of a few feet. They rise easily from the water, especially when facing a breeze, and alight rather abruptly. Sometimes during the day, but more frequently at night, they emit various loud rather plaintive cries, as well as cacklings of shorter guttural notes, which I think can neither be easily imitated nor well expressed in words, although Mr. Nuttall attempts to describe them by the syllables "ogh, ough, egh." In the north-eastern Isles, this bird is known by the name of Caloo, as well as the whimsical one of Coal-and-candle-light, both derived from its cries; and in the Hebrides it is named Ian-bhochail, ian signifying a bird, and bôchail expressing its soft protracted note. Among these islands it is chiefly to be seen in the open sounds or pretty far out at sea, when the tide is up, but at low water along the shores and over the shoals.

The flesh of this bird is not held in estimation, being said to be rank and fishy; but I cannot speak of its qualities from my own experience. The down is considered equal to that of the Eider, which it resembles with the exception of being of a greyish-white colour.

According to a note with which I am favoured by Dr. Edmondston, "*Anas glacialis* is a regular winter visitant in Shetland, where, however, not a single individual remains during the summer. It appears to be as regularly attached to its winter haunts as we may believe it to be to its breeding retreats, as about the same numbers frequent the same bays every winter. The colour of the male is at all seasons various, hardly any two being alike. He is lively, playful, and quarrelsome, and is chiefly heard in calm, frosty weather. The syllables a-a-alloo, in a tenor clear key, the last higher and

more acute, express the extent of their winter language. The male is one of the most elegant of the duck tribe. They are never seen on land, or on fresh water, except when breeding. On the lakes in Iceland they are numerous. The young usually five. They feed in the same manner as the Eider Duck ; but the bird is altogether more shy and active."

YOUNG IN WINTER.—The young when they appear on our coasts have the bill dusky-bluish-grey, the iris brown, the feet grey. In this state they differ little from the adult female, but have the plumage softer, especially on the neck, and the scapulars still shorter, and usually edged with grey, while the white of the lower parts is more or less tinged with brownish-grey on the breast and sides.

PROGRESS TOWARD MATURITY.—It appears that at the age of one year the young assume the adult plumage ; but on this subject I have not been able to make any observations.

MALE IN SUMMER.—At this season the upper part of the head and the nape are brownish black, the sides of the head greyish-white ; the neck all round and the fore part of the breast dark chocolate-brown ; the back and wing-coverts brownish-black ; the scapulars similar, but margined with reddish-brown ; the quills dark-brown ; the tail as in winter.

FEMALE IN SUMMER.—The female is of the same colours as in winter.

MERGANSERINÆ.

GOOSANDERS AND ALLIED SPECIES.

INTIMATELY allied, in many respects, to the Anatinæ and Fuligulinæ, and in others to the Divers and Cormorants, the Mergansers, although few in number, seem yet to form a very distinct family.

They are generally characterised by having the body large, elongated, elliptical, and depressed; the neck long and slender; the head oblong, compressed, and anteriorly narrowed. Their bill is rather long, straight, or a little reareuate, slender, higher than broad at the base, tapering, and toward the end becoming nearly cylindrical, the edges of both mandibles furnished with lamellæ much narrower than in the Ducks, and in the larger species conical, acuminate, and directed backwards, so as to resemble the teeth of an Indian saw; the unguis oblong, of the same breadth as the mandibles, and the upper abruptly decurved. The mouth, although narrow, is dilatable; the tongue fleshy, narrow, furnished with lateral bristles, and having the tip lacerated; the palate and pharynx papillate. The œsophagus is very wide in its whole extent, with thick walls; the proventricular glandules are small, and form a broad belt, at the upper margin of which, as well as here and there in the œsophagus, are large mucous crypts. The stomach is rather small, roundish, very muscular, with a thick rugous epithelium. The intestine is long, and rather wide, with moderately large cœca, and a globular cloaca.

The trachea, composed of numerous well-ossified rings, is simple and uniform in the females, but in the males variously enlarged, and always having an enormous dilatation at its lower extremity, partly bony and partly membranous; the

bronchi wide, and of about twenty half rings. The muscles as in the *Anatinæ*.

The eyes are rather small, the eyelids feathered. The nostrils oblong, sub-medial, in the fore part of the oblong nasal sinus, which is covered by the soft membrane of the bill. The apertures of the ears are extremely small.

The legs are short, and placed far behind; the tibia bare for a very short space; the tarsi very short, much compressed, stout; the toes four, of which the first, very small, elevated, and arched, has a lobiform membrane, the anterior long, and scutellate, the inner with a two-lobed membrane, the outer a little shorter than the third; the interdigital membranes full, and concave on the margin. The claws are small, little arched, compressed, that of the third toe rather depressed toward the end, which is rounded.

The plumage is moderately full, firm, and glossy; the feathers curved, with a small down-plumule. There is a general covering of fine down. All the species have the feathers of the hind head and nape elongated into a crest in both sexes; and in the males the feathers of the head and upper neck are small, blended, and silky. The wings are short, of moderate breadth, convex, pointed; the first primary longest; the inner secondaries elongated and tapering. The tail is short, much rounded, of from fourteen to eighteen stiffish tapering feathers.

Grey, white, and black are the predominant colours in the males; grey, brown, white, and reddish-brown in the females and young. There is a speculum on the wing, as in the Ducks. The males, which are larger than the females, assume in summer somewhat of the appearance of the females.

The Mergansers frequent lakes and rivers, as well as occasionally the sea. They swim and dive with great ease and rapidity, feed on fishes, and other aquatic animals, as reptiles and crustacea—never, I believe, using vegetable substances, although fragments of quartz are generally found in their gizzards. They are extremely voracious, their digestion being rapid, and, like other piscivorous birds, they sometimes gorge to excess, although, when apprehensive of danger,

they can easily rid themselves of part of their burden. Their flight is quick, direct, and performed by regular beats. They pass the summer in the colder regions, and in autumn advance southward, although, not requiring a high temperature, many remain in the northern parts. Their nests, rather bulky, and lined with down, which the female plucks from her breast, are placed on the borders of lakes or on islands. The eggs are numerous, elliptical, cream-coloured, or white. The young, covered with stiffish down, presently betake themselves to the water, under the protection of the female, who is deserted by the male as soon as incubation commences. When fledged they resemble the females. The young males acquire their perfected plumage at the second or third moult.

All the birds of this family were included by Linnæus in his genus *Mergus*, to which we usually give the name of Merganser. Of the four species that inhabit Europe and North America, one, *Mergus Albellus*, differs from the rest in having the bill so much shorter and broader as to resemble that of a Duck, while its marginal lamellæ are oblique, and not pointed as in the larger species. Another, of about the same size as the last, has the bill more elongated, but with the lamellæ compressed and abrupt at the end. It has been thought expedient to form the first of these small species into a genus, and I think not without reason. The other small species, although it has a longer bill, is otherwise so very similar in form and size, that, rather than make a genus of it, one might attach it to its neighbour, until other species having similar characters cast up; but it is still more nearly allied to the larger species. Now, the Linnæan generic name, *Mergus*, ought to be continued with the larger, more conspicuous, and best known species: thus, *Mergus Merganser* and *Mergus Serrator*. But as Brisson, a contemporary of Linnæus, named the same genus *Merganser*, it has been thought more expedient to make that the generic name of the large species, and employ the Linnæan name, *Mergus*, for the small species. If, on the other hand, *Merganser*, which signifies Diver-Goose, be applied to the large species, why should not *Merganas*, or Diver-Duck, be applied to the smaller? There is no consistency in the nomenclature of

natural objects ; but, to prevent the necessity of using a new generic name, I shall adopt those of Merganser and Mergus already used.

Four species occur in Britain : two common, one rather rare, the fourth a straggler.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. MERGANSER. GOOSANDER.

Bill about the length of the head, nearly straight, tapering, toward the end cylindrical, the edges with tapering, acute, dentiform lamellæ, directed backwards, the upper unguis oblong, abruptly decurved ; tarsus very short, compressed, with numerous small anterior scutella, reticulated on the sides with flat angular scales ; hind toe very small, arcuate, lobate ; anterior toes long, scutellate in their whole length, the outer nearly as long as the third ; interdigital membranes full, slightly concave on the margin ; claws small, compressed, little arched, the third depressed and rounded ; wings short, convex, acute, the first quill longest ; tail short, much rounded, of eighteen stiffish feathers.

1. *Merganser Castor*. *Buff-breasted Goosander*. Male with the head and upper neck greenish-black ; the lower neck, breast, abdomen, and sides reddish-yellow ; the wing-spot white. Female with the head and upper neck brownish-red, the lower neck pale grey barred with white, the breast and abdomen white.

2. *Merganser Serrator*. *Red-breasted Goosander*. Male with the head and upper neck greenish-black, the lower neck light red streaked with dusky, the breast and abdomen white, the sides minutely undulated, the wing-spot white, with two transverse black bands. Female with the head and upper neck reddish-brown, the lower neck brownish-grey barred with white, the breast and abdomen white, the wing-spot white, with a single black band.

3. *Merganser cucullatus*. *Hooded Goosander*. Male with the bill nearly as long as the head; a large, longitudinal compressed, semicircular black crest, with an angular patch of white behind; the head and upper neck black; the upper parts chiefly black, the lower white, the sides yellowish-brown undulated with black; feet yellowish-brown. Female with the crest smaller and decurved, the head reddish-brown, the throat greyish-white, the upper parts dusky, the lower white, the sides dusky brown.

GENUS II. *MERGUS*. *SMEW*.

Bill shorter than the head, rather stout, straight, tapering, the edges with narrow, oblique lamellæ, of which the outer ends are erect, dentiform, and rather acute; the upper unguis elliptical, decurved; tarsus very short, compressed, with numerous small anterior scutella, reticulated on the sides with flat angular scales; hind toe very small, arcuate, lobate; anterior toes long, scutellate, the outer nearly as long as the third; interdigital membranes full, concave on the margin; claws small, compressed, little arched, rather acute; wings short, convex, acute, the first quill longest; tail short, much rounded, of sixteen stiffish feathers.

1. *Mergus Albellus*. *Pied Smew*. Male with the bill much shorter than the head; a decurved longitudinal white crest, a greenish-black patch on the fore part of the cheek; the head and upper neck white; the upper parts chiefly black and grey, the lower white, the sides partly grey; feet greyish-blue. Female with the crest smaller; the head, cheeks, and hind-neck brownish-red; a reddish-black patch before the eye, the throat pure white, the upper parts black and grey, the lower white, the sides grey.

MERGANSER. GOOSANDER.

BILL about the length of the head, nearly straight or slightly rearcuate, rather stout and of greater height than breadth at the base, tapering to the middle, beyond which it is slender and cylindrical; upper mandible with its dorsal outline declinate for half its length, then direct and straight to the oblongo-elliptical convex unguis, which is abruptly decurved and rounded at the end, the lateral sinuses shortly rounded, the upper rather acute, the ridge broad at the base, gradually narrowed, the nasal sinus oblong, sub-basal, the edges marginate, serrate, with dentiform compressed, tapering lamellæ; lower mandible with the intercrural space very long, narrow, toward the end linear, the crura slender, slightly rearcuate at the base, laterally grooved, their erect edges with dentiform lamellæ, the unguis obovate and convex; the gape-line nearly straight.

The mouth narrow, but dilatable; palate flat; roof of upper mandible nearly flat, narrow, with a medial prominent line, a series of slight oblique lamellæ on each side, separated by a groove from the marginal series. Tongue slender, fleshy, papillate or bristly above and on the edges, with the tip narrow and lacerated. Œsophagus very wide in its whole length, more dilated within the thorax; the proventricular belt continuous. Stomach roundish, of moderate size, very muscular, with a dense rugous epithelium. Intestine long, rather wide anteriorly, narrowed toward the cæca, which are moderate, narrow at the base, cylindrical, obtuse; rectum with a large globular dilatation.

Trachea in the female simple and uniform; in the male with one or two dilatations, and an enormously large labyrinth at the lower end, partly bony and partly membranous.

Nostrils oblong, pervious, in the fore part of the nasal

space. Eyes rather small. External aperture of the ear extremely small.

The body large, elongated, elliptical, depressed; the neck long; the head moderate, oblong, anteriorly narrowed. The legs very short, and placed far behind; tarsus very short, stout, compressed, covered with small angular scales, anteriorly with a series of small scutella, and a short outer series. Toes four, the first very small, elevated, and lobate; the anterior long, the inner with a bilobate membrane, the third longest, but the outer little shorter, all scutellate in their whole length; the interdigital membranes full. Claws small, slightly arcuate, compressed, rather acute, that of the third toe a little enlarged internally, depressed toward the end, which is rounded.

Plumage moderately full, firm, glossy, more or less blended; feathers of the head and neck small and narrow, on the occiput and nape elongated and slender. Scapulars and inner secondaries elongated. Wings short, of moderate breadth, acuminate, with twenty-six quills; primaries stiffish, tapering, the first longest. Tail small, much rounded, of eighteen stiffish, tapering, but rounded feathers.

Piscivorous, swimming, and diving birds. The general habits already given.

Although the determination of the tail-feathers is not particularly difficult, it seems on this, as well as on some other occasions, to have sadly puzzled the ornithologists. Thus, Mr. Jenyns, in his generic character of *Mergus*, says "tail of twelve feathers." Mr. Selby says of *Mergus Serrator*, "tail composed of sixteen feathers;" and of *Mergus cucullatus*, "tail composed of fourteen feathers." Montagu, in speaking of the Goosander and Dundiver, says, "we can speak with certainty as to the Dundiver having twenty." Mr. Ord says the Goosander has "eighteen feathers" in the tail; and Wilson gives the Hooded Merganser "twenty feathers," which, perhaps, may be the reason why Mr. Mudie has done the same. In Mr. Audubon's *Ornithological Biography*, *Mergus Merganser* and *Mergus Serrator* are said to have eighteen, *Mergus cucullatus* and *Mergus Albellus* sixteen. Now, the true state of the case is this:—*Mergus*

Merganser and Mergus Serrator, male, female, and young, have undoubtedly eighteen tail-feathers. There is no lack of specimens in Old Scotia, and I have examined many, both entire and "in skin." Mergus Albellus has certainly sixteen; but of Mergus cucullatus I cannot speak decidedly. A specimen in my collection, however, has *eighteen*, but there *seems to be* a gap in the tail; and after finding the most trustworthy authors so often wrong in this matter, I have ceased to repose unnecessary confidence in them.

MERGANSER CASTOR. THE BUFF-BREASTED GOOSANDER.

GOOSANDER. DUN DIVER FEM. GREATER GOOSANDER. SAW-BILL.
JACK-SAW.

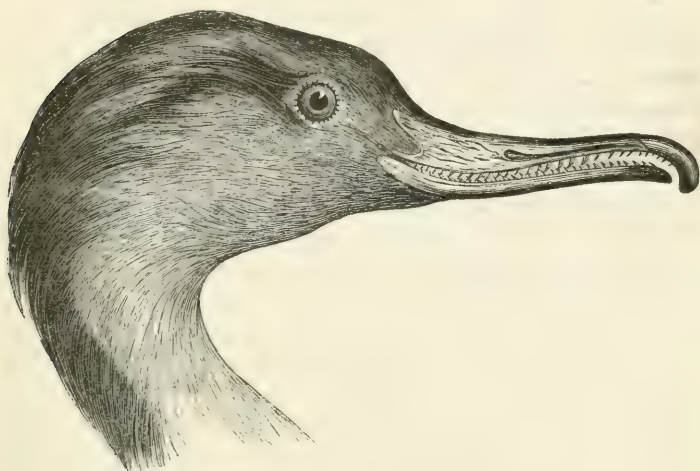


FIG. 73.

Mergus Merganser. Linn. Syst. Nat. I. 208. Male.
Mergus Castor. Linn. Syst. Nat. I. 209. Female and young.
Mergus Merganser. Lath. Ind. Ornith. II. 828. Male.
Mergus Castor. Lath. Ind. Ornith. II. 829. Female and young.
Grand Harle. Mergus Merganser. Temm. Man. d'Ornith. II. 881.
Goosander. Mergus Merganser. Selby, Illustr. II. 375.
Mergus Merganser. Goosander. Jennyns. Brit. Vert. Anim. 248.
Goosander. Mont. Ornith. Dict. and Suppl. Male.
Dun Diver. Mont. Ornith. Dict. and Suppl. Female and young.
Merganser Castor. Bonap. Comp. List. 59.

Male twenty-six inches long, with a broad longitudinal rather inconspicuous crest of oblong feathers; the bill and feet red; the head and upper neck greenish-black; the back black

before, grey behind ; the lower fore neck, breast, sides and abdomen pinkish-buff-colour, sides of the rump undulated with grey and white ; outer scapulars, wing-coverts, and secondary quills white. Female with the crest longer and more slender ; the bill and feet of a duller tint ; the head and upper neck light reddish-brown, the throat whitish, the lower neck pale-grey, the feathers edged with white, the breast and abdomen white, the sides grey ; the upper parts deep ash-grey, as are the smaller wing-coverts ; some of the secondary quills and their coverts white unless at the base. Young similar to the female.

MALE IN WINTER.—This beautiful bird, the largest of its family, on which account probably it has obtained the name of Goosander, has the body of an elongated elliptical form, and much depressed, although stout ; the neck rather long and thick ; the head rather large, ovato-oblong, narrowed anteriorly.

The bill is about the length of the head, rather stout and higher than broad at the base, tapering, beyond the middle slender and cylindrical. The upper mandible with its dorsal line declinate and somewhat concave to the middle, then straight and slightly ascending to the unguis, which is oblong, convex, abruptly decurved in the middle, the ridge broad, flattened, and little narrowed to the middle, where it becomes convex, the nasal sinus narrow, oblong, sub-basal, with a groove running from its anterior part to the side of the unguis, the limbs very slender, convex, the edges with thirty-six narrow, tapering, acuminate, dentiform lamellæ, directed backwards. The lower mandible slender, with the intercrural space very long, pointed, anteriorly a mere groove, the crura with their lower outline gently rearcuate, the sides convex below, longitudinally grooved above, the unguis elliptical, convex, with a broad median groove, the edges inclinate, with about forty compressed, tapering, acute serriform lamellæ.

The mouth, although narrow, is dilatable to an inch and three-fourths. The palate flat, anteriorly with a median serrulate elevated line, and on each side a series of small, acute lamellæ, besides those of the margin. The tongue, two

inches in length, is fleshy, tapering, emarginate and papillate at the base, with a longitudinal double series of slender, acute, reversed papillæ on its upper surface, and two series of bristly filaments on each side, its tip flattened, lacerated, and horny beneath. The œsophagus, sixteen inches long, is very wide, being an inch and a half in breadth at first, but in entering the thorax contracts to an inch, to expand into an elongated sac, including the proventriculus, three inches and a half in length, and two inches in width. The proventricular belt is two inches in breadth, its glandules very numerous, cylindrical, two-twelfths in length. The walls of the œsophagus are very thick, its two layers of fibres very distinct, its inner coat longitudinally plaited when contracted. The stomach is muscular, being in fact a strong gizzard, of moderate size, roundish, two inches long, with the lateral muscles half an inch thick, the epithelium nearly a twelfth in thickness, rather soft, and rugous. The intestine is six feet seven inches in length, and from half an inch in width in the duodenal part to three-twelfths and a half. The cæca are two inches long, cylindrical, obtuse, narrow at the base, their greatest breadth four-twelfths. The rectum is eight inches long, cylindrical, but enlarged into a globular cloaca, an inch and a quarter in width.

The trachea, which is about a foot in length, when moderately extended, is for a short space only four-twelfths in breadth, gradually expands to eight-twelfths, then as gradually contracts to four-twelfths, but again enlarges to six-twelfths, and slowly contracts to three-twelfths. The upper dilatation is much flattened, the lower less. The number of rings in this extent is an hundred and forty-eight. At the lower part is formed, by the union and expansion of a number of rings, an enormous long dilatation of an irregular form inclining to the right side, separated longitudinally on the right side by a membrane, from a very large recurvate tympanum, into which it opens below, and which is three-sided, the edges being bony and rounded, and the sides membranous. The right bronchus, having twenty half-rings, comes off from the lower curve of the first dilatation, and the left, which although longer, has the same number, from the lower

part of the tympanum; the distance from their bases being nearly an inch. The expanded part is two inches in length, an inch and five-twelfths in breadth, its greatest diameter two inches and two-twelfths. Having described this curious apparatus, I must apply to the system-makers, who are indignant at being supposed ignorant of anything, for its uses.

The nostrils are oblongo-elliptical, four-twelfths long, sub-medial, lateral, pervious. The eyes small, as are the apertures of the ears. The feet are very short, strong, and placed far behind. The tibia is bare for about a quarter of an inch. The tarsus very short, much compressed, with an anterior series of twenty-five, and twelve outer scutella, the sides with small, angular scales. The first toe very small, elevated, arched, with about ten scutella, and a lobiform membrane; the second with a two-lobed inner membrane, and about thirty-five oblique scutella; the third with forty-two, the fourth, a little shorter than the third, and with forty scutella. The interdigital membranes emarginate. The claws are small, a little arched, compressed, obtuse, that of the hind toe very slender and more curved, that of the third somewhat depressed and rounded.

The plumage is moderately full, dense, soft, and glossy. The feathers on the head and neck silky, blended, along nearly the whole breadth of the head and on the nape elongated so as to form a broad short crest, not very conspicuous. On the back the feathers are rather compact, on the lower parts blended. The wings are short, of moderate breadth, with thirty-six quills; the primaries narrow, tapering, stiffish, the first longest, the rest rapidly decreasing, the outer secondaries rather short, rounded, the inner elongated and tapering, but obtuse; the scapulars also very long. The tail is short, much rounded, of eighteen rather narrow, stiffish, obtuse feathers, of which the medial are an inch and three-fourths longer than the lateral.

The bill is bright vermilion, with the unguis black, and the ridge of the upper mandible, and part of the crura of the lower, dusky. The iris bright red. The feet bright vermilion, the claws reddish at the base, grey toward the end. The head and upper half of the neck are black, with bright green

and purplish reflections ; the lower part of the neck white behind ; its anterior part, and the whole lower surface and side of the body, of a most beautiful and delicate reddish-buff ; some of the feathers over the tibia minutely undulated with grey, and the larger inferior wing-coverts of that colour. The fore part of the back, and the inner scapulars black ; the hind part ash-grey, undulated on the sides of the rump ; the tail ash-grey, with black shafts. The outer scapulars are white, and conceal a band of black margining the wing anteriorly, and crossing its base. The wing-coverts are white ; the alula, primary coverts, and quills blackish-brown, lighter and tinged with grey on the inner webs ; some of the outer secondaries black, the rest white, six of the inner margined with a black line externally, and the last internally also. The outer secondary coverts are black at the base, that colour forming a bar across part of the wing.

Length to end of tail 26 inches ; extent of wings 36 ; wing from flexure $11\frac{1}{2}$; tail $5\frac{1}{4}$; bill along the ridge $2\frac{8}{12}$, along the edge of lower mandible 3 ; tarsus $1\frac{1}{2}$; first toe $\frac{6}{12}$, its claw $\frac{3}{12}$; second toe 2, its claw $\frac{5}{12}$; third toe $2\frac{1}{2}$, its claw $\frac{5}{12}$; fourth toe $2\frac{6}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female, which is considerably smaller, has the crest more elongated behind, some of the feathers being two inches and a half long, whereas in the male they are little more than one inch ; but, on the other hand, the scapulars and inner secondaries are much shorter. The bill, eyes, and feet are coloured as in the male. The head and upper part of the neck are brownish-red, but the upper part of the throat is white. All the upper parts of the body are deep ash-grey, with the margins of the feathers paler. The smaller wing-coverts, and the inner secondary quills and coverts, are also grey. The alula, primary coverts, and primaries brownish-black ; the outer secondaries black, the middle secondaries white, as are the ends of their coverts. The lower fore part of the neck is white, faintly tinged with grey ; the breast and abdomen white, tinged with buff ; the upper part of the sides, and some of the lower wing-coverts grey.

The œsophagus sixteen inches long ; the intestine five feet

eleven inches; the cœca an inch and three-fourths. The trachea is much flattened, and of nearly equal width throughout, its average breadth being nearly four-twelfths, but toward the end only three-twelfths; its rings uniform, slender, an hundred and forty-five in number. At the lower end five rings are united, and the large ring thus formed dilates and bifurcates below, forming two limbs, of which the right is longer. The bronchi, which come off at the distance of four-twelfths from each other, are of moderate size, and composed of about twenty half-rings.

Length to end of tail 24 inches; extent of wings 33; wing from flexure $10\frac{1}{2}$; tail $4\frac{1}{2}$; bill along the ridge $2\frac{4}{12}$; tarsus $1\frac{9}{12}$; middle toe $2\frac{5}{12}$, its claw $\frac{4}{12}$.

VARIATIONS.—Considerable differences as to size are observed, the longest males measuring twenty-seven inches, the shortest twenty-four. The females are always smaller than the males, but young males, being similar in plumage to the females, are apt to be mistaken for them. Adult males differ very little in the colours of the plumage, and this is equally the case with adult females. The bill of the male is represented by some as entirely red, but I have never seen one in which it was not partially black or dusky.

HABITS.—The Goosander, or Buff-breasted Merganser, which is widely dispersed in summer over the northern regions of both continents, is at that season very seldom met with in Britain, and that only in the remotest parts and islands of Scotland. The number of individuals there seen is very much inferior to that of the Red-breasted Mergansers. In the outer Hebrides, where I resided several years, although I have several times met with them on the lakes in summer, I never found a nest; but Mr. John MacGillivray, who visited these islands in the summer of 1840, was more fortunate, or more observant, for he found it pretty common, breeding by the larger lakes, and occasionally by the sea, as near Loch Maddy, in North Uist. In Orkney, on the other hand, it is only a winter visitant, leaving very early in spring. In winter it is met with sparingly in all parts of Scotland, as well

as in many districts in England, in the southern parts of which it is, however, of very rare occurrence. In Ireland, also, it occurs "in very limited numbers." At all seasons, it prefers lakes and rivers to estuaries, but may be seen, even in summer, fishing in the sea, especially in the lochs or indentations so common in Scotland. Being a heavy bird, with the body much depressed, and the plumage not remarkably full, it has the appearance of sitting deep in the water. It dives with extreme agility, remains long under the surface, and swims there with great speed. Its food consists of fishes of various kinds, but with us more especially trouts, of which eighteen were found in the gullet of one killed on the Tweed in the winter of 1838. Being shy, vigilant, and active, it is not easily obtained, as it neither admits a near approach, nor usually remains above water until the shot reaches it. In rising on wing it proceeds at a low angle, striking the water with its feet and wings, to the distance of several yards. Its flight is rapid, like that of a Duck, and performed at a considerable height, when it is travelling toward a distant place. The male emits a rough grunting cry, which, however, is very seldom heard. In the northern estuaries and bays, pretty large flocks are sometimes seen; but it is much more common to meet with the bird in pairs, or even singly, in most parts of the country. Although not very unfrequently seen in our markets, it is not there held in estimation, its flesh being coarse, and having the fishy flavour of that of the Divers and Cormorants, to which the Mergansers are allied in their mode of living.

The nest is said to be placed near the water, among the herbage, and to be composed of dry grass, sedge, fibrous roots, and other similar materials, with a lining of down plucked by the female from her breast. As observed by him in America, it is described by Mr. Audubon as being "very large, at times raised seven or eight inches on the top of a bed of all the dead weeds which the bird can gather in the neighbourhood. Properly speaking, the real nest, however, is not larger than that of the Dusky Duck, and is rather neatly formed externally of fibrous roots, and lined round the edges with the down of the bird. The interior is about seven and

a half inches in diameter, and four inches in depth. There are seldom more than seven or eight eggs, which measure two inches and seven-eighths in length, by two inches in breadth, are of an elliptical form, being nearly equally rounded at both ends, smooth, and of a uniform dull cream colour."

The young, at first covered with down of a greyish colour on the body, and reddish on the head, betake themselves at once to the water, and are tended by their mother with the greatest care, the male having deserted her after incubation commenced. In the end of October numbers arrive in Britain from other countries, many remaining during the winter. Those which harbour in the southern parts return northward by the end of April.

YOUNG.—In their first winter, the young of both sexes resemble the female, having the colours of the plumage as well as the crest similar, the males distinguishable from the females only by their greater size.

PROGRESS TOWARD MATURITY.—In its second year, the male is still similar to the female, with the exception of having the breast of a beautiful pinkish-buff, as in the adult, the sides under the wings partially marked with grey lines, the smaller wing-coverts of a paler grey, the white secondary coverts greyish-black at the base, and grey at the end. At the next change the plumage is completed.

REMARKS.—It was long supposed that the young males and the females of this bird formed a distinct species, to which the names of *Mergus Castor* and *Dun Diver* were given. It is certainly very extraordinary to find an adult male with a crest broad and comparatively short, while in the females, and even the young of both sexes, it is narrow and elongated. But repeated observations and dissections lead to the conclusion that the *Dun-Diver* and *Merganser* are specifically identical.

The female of *Merganser Castor* may be distinguished from that of *Merganser Serrator* by attending to the following

circumstances :—The female of Merganser Castor is considerably larger, with the bill thicker in proportion to its length, and especially at the base. The crest-feathers of the former are not, as in the latter, shorter in the middle, and longer at the fore and hind parts. The grey of the back is uniform, and the white wing-spot entire, in Merganser Castor, while in Merganser Serrator the back is brownish-grey, and the white wing-spot crossed by a black band.

MERGANSER SERRATOR. THE RED-BREASTED GOOSANDER.

RED-BREASTED MERGANSER. HARLE. EARL-DUCK. SIOLTE.

Mergus Serrator. Linn. Syst. Nat. I. 208.

Mergus Serrator. Lath. Ind. Ornith. II. 829.

Red-breasted Merganser. Mont. Ornith. Dict. and Suppl.

Harle huppé. Mergus Serrator. Temm. Man. d'Ornith. II. 884.

Red-breasted Merganser. Mergus Serrator. Selby, Illustr. Brit. Ornith. II. 379.

Mergus Serrator. Red-breasted Merganser. Jen. Brit. Vert. Anim. 249.

Merganser Serrator. Bonap. Comp. List, 59.

Male twenty-four inches long, with a longitudinal crest of linear feathers, of which two separate tufts are longer than the rest ; the bill and feet red ; the head and upper neck greenish-black ; the back black before, grey with dusky lines behind ; the middle fore-neck light-red, streaked with dusky ; breast and abdomen pure white ; sides and hind part of back undulated with dark-grey lines ; a white patch on the wing, including the smaller wing-coverts, with two transverse black bands. Female with the crest smaller ; the bill and feet of a duller tint ; the head and upper neck light reddish-brown ; the throat whitish ; the lower neck brownish-grey ; the feathers edged with white ; the breast and abdomen white ; the sides grey ; the feathers edged with paler ; the white patch on the wing as in the male, but not extending to the smaller wing-coverts, which are grey, and thus having only one dark band. Young similar to the female, but more brown above.

MALE IN WINTER.—This species, not very fitly named the Red-breasted Merganser, the lower part of its neck, which is reddish and streaked with black, having been mistaken for its breast, which is pure white, is inferior in size to the Buff-breasted Merganser, or Goosander, and of a more

slender form. The body is elongated, depressed, and tapering at both ends; the neck rather long, thick below, and much contracted above; the head rather large, oblongo-ovate, narrowed and compressed anteriorly.

The bill is about the length of the head, nearly straight, being but slightly rearcuate, slender, tapering, cylindrical toward the end, but higher than broad at the base. The upper mandible with its dorsal line gently declinate to the middle, then straight or slightly ascending to the unguis, which is elliptical, convex, and decurved, the ridge broad and flattened at the base, convex in the rest of its extent, the nasal sinus oblong, basal, with a groove running from its anterior end to the side of the unguis, the limbs slender, convex, the edges with thirty-two narrow, tapering, acuminate, dentiform lamellæ, directed backwards. The lower mandible slender, with the intercrural space very long, pointed, anteriorly a mere groove, the crura with their lower outline gently rearcuate, the sides convex, longitudinally grooved toward the margin, the unguis elliptical, convex, the edges inclinate, with about forty-five compressed serriform lamellæ, much smaller, and directed less backwards than the upper.

The mouth is dilatable to an inch and a half. The palate is flat, anteriorly with a median ridge, and on each side a series of small, acute lamellæ, separated by a groove from those of the margin. The tongue, an inch and nine-twelfths in length, is fleshy, tapering, with two series of acute reversed papillæ above, and a double series of bristly filaments on the sides. The œsophagus, twelve inches and a half in length, is very wide, having an average diameter of an inch and a half along the neck, an inch in entering the thorax, and afterwards nearly an inch and a half. The proventricular part is two inches long, its glandules cylindrical and very numerous, from two-twelfths to three-twelfths in length, forming a belt an inch and a half in breadth. The stomach is rather small, being an inch and a half in length, an inch and ten-twelfths in breadth, of a roundish form, compressed, with moderately-developed muscles, a quarter of an inch thick; the tendons very large, being ten-twelfths in breadth, and seven-twelfths in length; the inner coat thick and irregularly rugous. The

intestine is five feet long, from five-twelfths to three-twelfths in width. The cæca are oblong, an inch and a half in length. The rectum is five and a half inches in length, its cloacal dilatation an inch and three-fourths in width.

The trachea, which is about eleven inches in length, when moderately extended, is at first, for two inches and a quarter, nearly four-twelfths in width, but then expands into an oblong dilatation three inches long, and ten-twelfths in breadth, after which it contracts to less than three-twelfths, enlarges a little to nearly four-twelfths and a half, and so continues to the tympanum. The number of rings is an hundred and fifty, of which twenty-eight at the lower part are very broad behind, and very narrow before. The form of the enormous dilatation differs from that of the Merganser. Several of the lower rings unite and become enlarged, passing nearly in the median line; but there are two tympaniform expansions, one on the right side, with two membranes, another on the left with one large membrane. The bronchi, short and wide, with twenty half-rings, come off at the distance of ten-twelfths from each other, the right longer than the left. The greatest length of the tympanum is two inches, the greatest breadth an inch and a half.

The nostrils are oblong, two-twelfths and a half in length, sub-basal, lateral, pervious. The eyes small, two-twelfths and a half in breadth. The aperture of the ear scarcely one-twelfth across. The feet, which are short and strong, are placed far behind. The tibia is bare for a quarter of an inch. The tarsus very short, much compressed, anteriorly with a series of twenty-five rather small, narrow scutella, and about twelve external, the sides reticulated with small flat scales. The first toe is very small, elevated, arched, with twelve scutella, and a lobiform membrane; the second toe about half an inch shorter than the third, with thirty-five oblique scutella; the third forty-two; the fourth of about the same length, with forty-six scutella; the second toe with a two-lobed membrane, the outer with a thick margin; the interdigital membranes reticulated, with concave margins. The hind claw very small, curved, compressed, the rest small, compressed, convex, obtuse, that of the third toe depressed.

The plumage is full, close, and firm ; the feathers curved ; those of the head linear, soft, glossy, with velvety texture ; on the crown elongated into a longitudinal crest of linear feathers with disunited filaments, two tufts more elongated than the rest, the longest three inches and a quarter in length. The feathers of the upper parts are generally broad, of the lower narrow, all rounded and blended. The lower surface is glossy, as in the Grebes and many Ducks. The wings are short, convex, of moderate breadth, and pointed, of twenty-seven quills. The primaries tapering, stiff, the first longest, the rest rapidly diminishing ; the secondaries sixteen, the outer broad, incurved, rounded, the inner long and tapering. There are six humerals, and the scapulars are long and tapering. The tail is very short, much rounded, and emarginate, of eighteen tapering feathers, of which the lateral are an inch and ten-twelfths shorter than the medial.

The bill is deep vermilion, with the ridge somewhat dusky, the unguis pale yellowish-grey. The iris blood-red. The feet deep vermilion externally, paler internally, the webs of a duller tint, the claws light grey. The head is black, its sides glossed with green ; its upper, lower, and hind parts tinged with purplish-blue. A band of black runs down the hind-neck ; a broad band of white across the narrow part of the neck ; the lower part of the neck anteriorly and laterally is light red, streaked and undulated with brownish-black. The lower parts of the body are glossy white, with a faint tinge of cream-colour ; the sides under the wings, the outer tibial feathers, and the lateral inferior tail-coverts, minutely undulated with black. The axillars and lower wing-coverts white, the larger grey. The lower part of the neck behind, and the fore part of the back, glossy black. A tuft of large feathers anterior to the shoulder-joint white, with broad black margins. The inner long scapulars purplish-black, the outer white. The upper wing-coverts are brownish-grey, but the larger are white, forming a transverse patch of that colour. The alula, primary coverts, primaries, and four outer secondaries are blackish-brown, as are the outer four secondary coverts ; the rest of the secondary quills and coverts are black at the base, white

toward the end, four of the secondary quills having black margins; but the three inner secondaries and their coverts are brownish-black. The hind part of the back is light ash-grey, minutely undulated with black; the tail brownish-grey.

Length to end of tail $24\frac{1}{4}$ inches; extent of wings 30; wing from flexure $9\frac{1}{2}$; tail $3\frac{3}{4}$; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible $2\frac{1}{2}$, its height at the base $\frac{7}{12}$; tarsus $1\frac{1}{12}$; first toe $\frac{8}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{5}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{6}{12}$, its claw $\frac{3}{12}$.

FEMALE.—The female is considerably smaller than the male, and has the plumage much less variegated. The feathers of the crest are shorter, and the tuft anterior to the wing-joint is wanting. The œsophagus is twelve inches and a half long; the stomach an inch and a half; the intestine five feet, from half an inch to three-twelfths in width; the cœca an inch and a half long. The bill is dusky above, vermilion beneath and on the edges; the feet of a paler tint than in the male. The head, and the hind part and sides of the neck to half-way down, are light reddish-brown; the throat greyish-white; the lower part of the neck all round greyish-brown, the anterior feathers tipped with white; the rest of the lower parts pure white, excepting the sides under the wings, and some of the lower wing-coverts, which are brownish-grey. The upper parts are brownish-grey, the feathers edged with grey; the smaller wing-coverts grey, without the white patch seen in the male. The quills are brownish-black, the inner secondaries tinged with grey, and there are two white patches formed by the outer secondaries and their coverts, as in the male, but of less extent. The hind part of the back and the tail-feathers are dusky grey.

Length to end of tail $22\frac{1}{2}$ inches; extent of wings $28\frac{1}{2}$; wing from flexure $9\frac{1}{2}$; tail $3\frac{2}{12}$; bill along the ridge $2\frac{3}{12}$; tarsus $1\frac{8}{12}$; middle toe $2\frac{5}{12}$, its claw $\frac{4}{12}$.

VARIATIONS.—Very considerable differences as to size occur in both sexes. The digestive organs vary several

inches in length in the same sex. The males, when full-grown, vary little in colour, and the same may be said of the females; but the former change colour in summer, like many Ducks. The lower parts are sometimes, especially in rather young males, of a fine ochraceous tint, richest in winter and spring, and fading in summer.

HABITS.—The summer residence of this species is in the northern parts of both continents, from the colder temperate regions to the borders of the polar ice. In winter it advances southward, in America as far as the Gulf of Mexico, and in Europe to the coasts of France, as well as to Switzerland and Italy. It seems, therefore, somewhat strange that in England it is of rare occurrence at that season in the southern districts, while in the firths and lakes of Scotland it is not uncommon. In the latter country it is generally dispersed, but in summer is not met with to the south of the Moray Firth on the eastern side, or to that of the Clyde on the western. In winter it betakes itself chiefly to streams and lakes, resorting to the sea when they are frozen, and in summer it seems to prefer the same situations, although it may often be seen on the sea. In the outer Hebrides, in March, April, and part of May, and again in autumn, I have seen very large flocks in the small sandy bays, fishing day after day for sand-eels. They sit in the water much in the manner of the Cormorants, but without sinking so deep, unless when alarmed, and advance with great speed. It is a pleasant occupation to an idle scholar or wandering ornithologist to watch one of these flocks as it sweeps along the shores. I have many times engaged in it, both with the desire of shooting some of them, and of studying their manners, which are very graceful. You may suppose us to be jammed into the crack of a rock, with our hats off, and we peeping cunningly at the advanced guard of the squadron which is rounding the point at no great distance. There they glide along, and now, coming into shallow water, they poke their heads into it, raise them, and seem to look around, lest some masked battery should open upon them unawares. Now one has plunged with a jerk, another, one here, one there, at length the whole

flock. Now start up, and if you wish a shot, run to the waters' edge and get down among the sea-weed behind a stone, while I from this eminence survey the submersed flock. How smartly they shoot along under the water, with partially outspread wings, some darting right forward, others wheeling or winding, most of them close to the sandy bottom, but a few near the surface. Some flounders, startled by the hurricane, shoot right out to sea, without being pursued. But there, one is up, another, and I must sink to repose in some hole. How prettily they rise to the surface, one here, another there, a whole covey at once emerging, and all without the least noise or splutter. But they are far beyond shot range. However, having come near the next rocky point, they now turn, dive in succession, and will scour the little bay until arising here at hand they will be liable to receive a salute that will astonish them. A whole minute has elapsed, half another; but now one appears, two, many, the whole flock; and into the midst of them pours the duck shot, while the noise of the explosion seems to roll along the hill side. In a twinkling all are down, save six that float on the water, four dead, one spinning round, and the other striving in vain to dive. In less than two minutes they are seen emerging, more than a quarter of a mile out at sea, and presently again they are out of sight. On such occasions, they seldom fly.

In the middle of May, having paired, they disperse, betaking themselves to the lakes and pools, but some also to the little sea-islands. The nest is placed among the grass or heath, near the edge of the water, and is composed of withered herbage, not very neatly arranged, but lined with the down which the female plucks from her breast. The eggs, from five to ten, are of a regular oval form, cream-coloured, or very pale buff, averaging two inches and a-half, by an inch and three-fourths; but they vary considerably in size. When incubation has commenced, the male, having nothing to engage his attention, and feeling no desire to help his mate, leaves her, and joins his fellows, or goes a-fishing by himself. The female, meanwhile, sits very assiduously, so as to allow a person to advance very close to her before rising; and, having at

length accomplished her task, helps her young ones from the shells, and presently takes them with her to the water, where they swim and dive as expertly as if it were their native element.

This bird flies with rapidity, in the manner of a duck, its wings whistling as it speeds along. It is very shy, vigilant, and active, so that the only good chance one has of shooting it on the water, is either when it is floating with its head below, or just as it emerges after diving. Its flesh, however, is not in request, being tough, oily, and with what is called a fishy flavour. On ordinary occasions, it rises from the water at a very low angle, striking the surface with its feet and wings, but it is able also to spring up directly either from the ground or from the water. Its food consists of fishes of various kinds, sand-eels, podleys, fresh-water eels, and trouts.

The moult takes place from the middle of summer to the middle of autumn. The males after leaving the females undergo a change of plumage, which assimilates them in some measure to them; but in this state I have not observed them. Nor have I taken note of the young birds in their down covering, in which condition they are, however, described by Mr. Audubon:—"When about a fortnight old, the young, such as I found them in Labrador, are entirely covered with soft down, which is dusky reddish-brown on the head and hind neck, greyish-brown on the back, with three white patches on each side, one terminating the wing, another a little behind it, the third, which is larger, behind the leg; the lower parts greyish-white; a white band from the eye to the bill, a reddish-brown band under the eye and along the side of the neck."

In Ireland it is also indigenous, though "the numbers are greatly increased in winter by migration from the north."

YOUNG.—When fledged, the young are similar to the adult female; but have the bill and feet duller, the iris yellow, the throat dotted with light red, the brownish-red of the neck less extended, and most of the feathers tipped with

whitish, the lower fore neck of a lighter tint, and the upper parts darker with less grey.

PROGRESS TOWARD MATURITY.—M. Temminck states, that “at the age of one year, the young males have the upper parts varied with blackish, the neck and head still retaining their reddish tints,” and several authors assert that when two years old they acquire the fully-coloured plumage of the adult.

MERGANSER CUCULLATUS. THE HOODED GOOSANDER.

HOODED MERGANSER.

Mergus cucullatus. Linn. Syst. Nat. I. 207.

Mergus cucullatus. Lath. Ind. Ornith. II. 830.

Hooded Merganser. *Mergus cucullatus.* Audubon Orn. Biog. III. 246, v. 619.

Harle couronné. *Mergus cucullatus.* Temm. Man. d'Ornith. IV. 557.

Hooded Merganser. *Mergus cucullatus.* Selby, Illustr. II. 383.

Mergus cucullatus. Hooded Merganser. Jen. Brit. Vert. Anim. 249.

Mergus cucullatus. Bonap. Comp. List, 59.

Male with the bill nearly as long as the head, an inch and three-fourths in length, three-twelfths in breadth behind the unguis ; a large longitudinal compressed semicircular black crest, with an angular patch of white behind ; head, upper neck, hind part of lower, and the greater part of the back, black ; lower fore-neck and breast white ; two transverse curved lines on each side before the wing ; sides yellowish-brown, finely undulated with black ; primary quills and coverts brownish-black ; outer secondary quills and coverts greenish-black, white toward the end ; inner white, with black margins. Female with the crest smaller and decurved ; the upper part of the head reddish-brown ; cheeks and upper neck greyish-brown ; throat greyish-white ; lower part of neck grey ; back blackish-brown ; wings without white on the inner secondaries ; lower parts greyish-white ; the sides dusky brown. Young similar to the female, more tinged with brown above, and faintly barred with grey beneath.

MALE IN WINTER.—The Hooded Goosander, scarcely inferior in beauty to the Pied Smew, and slightly exceeding it in size, is precisely similar to that species in form, but with

the bill longer and more attenuated, and thus agreeing better with that of the Mergansers. Its body is oblong, full, much depressed; the neck of moderate length; the head rather large, oblong, and compressed.

The bill is about the same length as the head, straight, slender, considerably higher than broad at the base, tapering, and becoming nearly cylindrical beyond the nostrils; the upper mandible with its dorsal line gently declinate for half its length, then direct, on the unguis suddenly decurved, the ridge broad and flattened at the base, gradually narrowed, toward the end convex, the sides with a faint groove near the margin, less distinct than in the Mergansers, but more so than in *Mergus albellus*, the edges marginate, straight, with about thirty short, oblique, dentiform lamellæ, of which the outer ends are rather broad and abrupt, and project considerably, the unguis elliptical, convex, much decurved, the nasal sinus oblong, sub-basal, covered by the soft membrane of the bill; lower mandible with the intercrural space very long, extremely narrow, and partially bare, the crura slender, with their outlines straight, the sides convex, grooved above, the margins with about twenty-five distinct dentiform lamellæ, and an anterior nearly continuous plate, with fifteen grooves, the unguis ovato-triangular, convex in both directions.

The mouth is narrow, measuring seven-twelfths and a half across. The palate is flat, as is the anterior part of the roof of the mouth, on which, besides a median ridge, are two longitudinal series of slender oblique lamellæ, independently of the dentiform laminae of the margin. The tongue is fleshy, slender, an inch and a half in length, with two rows of reversed horny papillæ above, and on each side two series of bristly filaments. The œsophagus, seven inches and a quarter in length, an inch in width along the neck, but considerably enlarged within the thorax, has the walls thick, with distinct muscular fibres; the proventricular belt of very small cylindrical glandules, an inch and a quarter in breadth. The stomach is muscular, being a gizzard of moderate strength, an inch and a half in length, an inch and a third in breadth, with the lateral muscles seven-twelfths thick; the epithelium

dense, and forming two flat grinding plates. The intestine is four feet three inches long, from three-twelfths and a half to two-twelfths and three-fourths in width; the cœca nine-twelfths long, and two-twelfths in width. The rectum is three inches long, five-twelfths wide at first, but dilating into a globular sac, an inch in width.

The trachea, six inches and a quarter in length, is much flattened, at first three-twelfths and a half in breadth, then contracting gradually to two-and-a-half-twelfths, but at the lower part of the neck enlarging to four-and-a-half twelfths, then assuming a trigonal form, with an anterior acute carina. The rings, an hundred and two in number, are broad and osseous, in the lower carinated part slender and widely separated; but besides these, eight are united to form part of the expansion on the lower larynx, which is of an irregular form, projecting anteriorly with a rounded bulge, and dilated on the left side, its greatest breadth nine-twelfths of an inch. The bronchi are of moderate length, with about thirty half-rings.

The nostrils are narrow, oblong, three-twelfths long, sub-medial near the margin; the eyes small. The legs are very short, and placed far behind; the tibia bare for a quarter of an inch; the tarsus extremely short, much compressed, with about sixteen medial and six outer small scutella, the rest reticulated with small angular scales. The hind toe very small, slender, with a lobiform membrane, and twelve scutella; the second with twenty-five scutella extending from the base to the end; the third with thirty-two; the fourth with forty scutella, and a little shorter than the third, which is double the length of the tarsus; the outer interdigital membrane emarginate. The claws small, arcuate, compressed, rather acute, the inner edge of the third a little dilated.

The plumage is full, soft, firm, and blended. The feathers of the upper part of the head and nape are elongated, linear, and erectile, forming a narrow crest; of the rest of the head and upper neck small; of the lower parts oblong, firm, and glossy; of the sides elongated and curved; of the shoulders abrupt; of the upper parts ovate; the scapulars of moderate

length. The wings are very short, narrow, convex, and pointed; the primaries stout, tapering, pointed, the outer two sinuate on the inner web toward the end, the first longest, the second scarcely shorter, the rest rapidly decreasing; the secondaries thirteen, the outer short, incurvate, obliquely rounded, the inner tapering and elongated. The tail short, straight, much rounded, of eighteen rather narrow, obtusely pointed feathers, of which the outer is an inch and a half shorter than the medial.

The bill is black, with the unguis whitish. The iris yellow. The feet yellowish-brown, the claws dusky. The upper part of the head is brownish-black, with a large patch of white on each side behind the eye, conspicuous in the erected crest; the rest of the head, the neck half-way down, two semi-lunar bands before the wings, and the hind part of the neck greenish-black; the upper parts of the body brownish-black, the tail greyish-black; the smaller wing-coverts partly deep grey; the primary quills and their coverts brownish-black; the outer secondary quills and coverts greenish-black, toward the end white, the inner white, with black margins. The lower parts are white, but the sides finely undulated with yellowish-brown and brownish-black, and the lower tail-coverts are similarly marked; the axillars and some of the lower wing-coverts white, the rest grey.

Length to end of tail 19 inches; extent of wings 28; wing from flexure $7\frac{1}{2}$; tail $4\frac{1}{4}$; bill along the ridge $1\frac{0}{2}$, along the edge of lower mandible $1\frac{1}{2}$, its height at the base $\frac{6}{12}$, its breadth behind the unguis $\frac{3}{2}$; tarsus $1\frac{2}{2}$; first toe $\frac{6}{12}$, its claw $\frac{3}{2}$; second toe $1\frac{5}{12}$, its claw $\frac{3}{2}$; third toe $1\frac{0}{2}$, its claw $\frac{4}{12}$; fourth toe $1\frac{0}{2}$, its claw $\frac{3}{2}$.

FEMALE.—The female, which is much smaller, has the crest less elongated, and composed of more slender feathers of looser texture. The upper mandible is dusky, with the margins orange, and the unguis whitish; the lower mandible dull orange, dusky near the unguis, which is whitish. The feet are olivaceous. The upper part of the head and the nape are reddish-brown; the sides of the head, and the upper half of the neck greyish-brown, but the throat brownish-white.

The lower neck anteriorly brownish-grey, behind brown ; the upper parts in general blackish-brown, the feathers edged with paler ; the tail dark greyish-brown ; the primary quills and coverts greyish-brown ; the outer secondary quills broadly edged externally with white, and their coverts with a white mark toward the end. The lower parts are greyish-white, the sides greyish-brown, and the lower tail-coverts marked with the same.

The trachea of the female, similar to that of Merganser Castor, is considerably flattened, and of nearly equal breadth throughout, its average width being nearly four-twelfths, but toward the end only three-twelfths ; its rings uniform, slender, an hundred and fifty in number. At the lower end several rings are united, and the large ring thus formed dilates and bifurcates below, forming two limbs, of which the right is longer. The bronchi, which come off at the distance of four-twelfths from each other, are of moderate size, and composed of twenty half-rings.

Length to end of tail 17 ; extent of wings 25 ; bill along the ridge $1\frac{8}{12}$; wing from flexure $7\frac{1}{4}$; tail $3\frac{3}{4}$; tarsus $1\frac{2}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

HABITS.—The proper country of this beautiful bird is North America, where its habits have been studied by Mr. Audubon, whose account of them I here present in an abridged form :—The Hooded Mergansers arrive on the waters of the western and southern states early in October, generally later than many species of Duck, but sooner than the Goosander and Red-breasted Merganser. They prefer long, narrow, and moderately deep creeks and ponds, and are seldom seen on the sea-coast. Their food consists of small fishes, in pursuit of which they are extremely active, being most expert divers. Their flight is also very rapid, and it is difficult to shoot them either when flying or when on the water. They range throughout the whole United States during winter, feeding in the bays and estuaries of the eastern coast, as well as in the inland streams, pools, and lakes. Those which remain in summer breed in holes in trees, like the Wood Ducks, forming a slight nest of a few dry weeds and feathers,

lined with a small quantity of down, and laying from five to eight eggs, an inch and three-fourths in length, an inch and three-eighths in breadth, and of a reddish-white colour. The young, at first covered with down of a very dark brown tint, are conveyed to the water by their mother, who carries them gently in her bill, without the aid of the male, who deserts her after incubation commences. Those which leave the United States set out from the middle of March to the beginning of May. When migrating, they fly at a great height, in small loose flocks, without any regard to order. Their notes are a sort of rough grunt, resembling the syllables croo, croo, and are the same in both sexes. The males at first resemble the females, and do not acquire the full beauty of their plumage until the third spring.

In only a few instances this species has been met with in Europe. Mr. Selby first added it to the British Fauna, "upon the authority of a specimen that was killed at Yarmouth, in Norfolk, in the winter of 1829, the skin of which" he obtained. It appeared to be a young female, and it is added—"I have been informed that more instances have occurred, all apparently females, or young males in the garb of that sex." In Ireland it has once been obtained, at Dingle Bay, on the coast of Kerry, by Dr. Chute.

YOUNG.—When fledged, the young differ little from the adult female; their colours being similar, but the upper parts more brown, the white on the throat dotted with pale red, the white of the breast faintly barred with grey, and the brown of the sides and below the tail more extended.

REMARKS.—Although not much superior in size to the Smew, this species differs from it in having the bill longer, and more slender, with the lamellæ less numerous, much more compressed, and abruptly terminated. Although these lamellæ differ from those of the large Mergansers, the Hooded may be placed with them until some species having similar characters be discovered. Mr. Selby states that the number of tail-feathers in the present species is fourteen, and others

that it is sixteen, but the true number is eighteen. The account of the digestive and respiratory organs I have derived from the examination of a male preserved in spirits, and which I dissected for Mr. Audubon, the notice in the fifth volume of his work being, like all the anatomical notices there, exclusively my own, as, indeed, is acknowledged by the author.

MERGUS. SMEW.

BILL shorter than the head, straight, rather stout as compared with that of a Merganser, rather slender compared with that of a Duck, and in fact combining the characters of both, higher than broad at the base, tapering to the end, where it is nearly cylindrical; upper mandible with its dorsal line declinate nearly to the unguis, which is oblongo-elliptical and abruptly decurved, the lateral sinuses short and rounded, the upper broad and rather angular, the ridge broad at the base, gradually narrowed, broadly convex toward the end, the nasal sinus oblong, sub-basal, the edges marginate, serrate with the dentiform, tapering, slightly reversed ends of the oblique short lamellæ; lower mandible with the intercrural space long, narrowly-pointed, but much wider than in the Mergansers, the crura slender, nearly straight, laterally grooved, their erect edges serrate with minute erect dentiform lamellæ, the unguis oblongo-trigonal and convex.

The mouth rather narrow, but dilatable; palate flat, roof of upper mandible considerably concave, with a medial roughish ridge, and on each side a series of very small lamellæ, separated by a groove from the marginal series. Tongue rather slender, fleshy, grooved above, papillate at the base, bristly above and on the edges, the tip narrow, concave, and rounded.

The other characters are similar to those of the Mergansers; but the tail has only sixteen feathers.

The only species of this genus known to me is in external form almost as much a Duck as a Merganser, and, were the latter genus unknown, would no doubt rank as an "aberrant" Fuligula. As its history will be found in the following pages, it is needless to say more on the present occasion.

MERGUS ALBELLUS. THE PIED SMEW.

SMEW. WHITE NUN. PIED DIVER. VARE WIGEON.

Mergus Albellus. Linn. Syst. Nat. I. 209.

Mergus Albellus. Lath. Ind. Ornith. II. 831.

Mergus minutus. Linn. and Lath. Young.

Smew. Mont. Ornith. Dict. and Suppl.

Harle Piette. Mergus Albellus. Lath. Ind. Ornith. II. 887.

Smew or White Nun. Mergus Albellus. Selby, Illustr. II. 385.

Mergus Albellus. Smew. Jenyns. Brit. Vert. Anim. 250.

Mergus Albellus. Bonap. Comp. List. 59.

Male with the bill shorter than the head, an inch and a quarter in length, three-twelfths and-a-half in breadth behind the unguis ; a decurved longitudinal white crest ; a patch of greenish-black on the fore part of the cheek, and a band of the same along the side of the occiput ; the neck, scapulars, smaller wing-coverts, and lower parts, white ; the back black, shaded into grey behind ; a transverse black line on each side before the wing ; primary quills and coverts brownish-black ; secondary quills and coverts black, tipped with white ; scapulars edged with black ; sides partly grey. Female with the upper part of the head, hind part of cheeks, and nape, brownish-red ; a blackish-brown patch on the fore part of the cheek ; throat white ; lower part of neck all round ash-grey, darker above ; back blackish-grey, its hind part and scapulars ash-grey ; wings as in the male ; lower parts white, with the sides partly grey. Young with the upper part of the head, cheeks, and nape yellowish-brown ; the upper parts dark brownish-grey ; the lower white, but with the sides, fore neck, abdomen, and lower tail-coverts grey, patched with dusky ; in other respects nearly like the female.

MALE IN WINTER.—This beautiful bird, which is some-

what larger than our common Teal, seems nearly as much allied to the Ducks as to the Mergansers. Its body is oblong, full and much depressed; the neck of moderate length; the head rather large, oblong, and compressed.

The bill is rather shorter than the head, straight, rather slender, considerably higher than broad at the base, tapering, and becoming nearly cylindrical toward the end; the upper mandible with its dorsal line gently declinate and nearly straight to beyond the middle, then direct, abruptly decurved on the unguis, which is oblongo-elliptical and transversely convex, the ridge broad and flattened at the base, gradually narrowed, toward the end convex, the edges marginate, nearly straight, with about forty short, oblique lamellæ, of which the outer ends are dentiform, tapering, and project considerably; the nasal sinus oblong, sub-basal, covered by the soft membrane of the bill; lower mandible with the intercrural space long, narrowly pointed, partially bare; the crura slender, with their lower outline straight, a little convex at the base, the sides convex, sloping outwards, grooved, the margins with about sixty minute, erect, dentiform lamellæ, the unguis oblongo-triangular, convex in both directions.

The roof of the mouth is nearly flat, with a median ridge, and on each side a series of very slender oblique lamellæ besides the marginal plates. Nostrils oblongo-elliptical, two-twelfths and a quarter in length, sub-medial, near the margin. Eyes small. Legs very short, and placed far behind; tibia bare for only a quarter of an inch; tarsus very short, much compressed, with about twenty small medial, and six outer scutella, the rest reticulated with small angular scales. The hind toe very small, slender, with a rather large lobiform membrane, and ten scutella; the basal part of the second scaly, its terminal part with eighteen scutella; the third toe a little longer than the outer, and double the length of the tarsus, with forty scutella; the fourth with forty-six. The claws small, arcuate, compressed, rather sharp, the inner edge of the third a little dilated.

The tongue, one inch five-twelfths long, is broader than in the Mergansers, fleshy, papillate at the base, deeply grooved above, covered there and on the edges with reversed

short bristles; the tip thin, horny, and channelled. The œsophagus, nine inches long, is of moderate width, varying about an inch, the proventriculus an inch and two-twelfths. The stomach is a muscular gizzard, of a transversely elliptical form, an inch and four-twelfths long, an inch and three-fourths in breadth, its muscles very thick, the epithelium rugous, with two grinding plates. The intestine very long, of moderate width; the cœca three inches in length, and placed at the distance of two inches and a quarter from the extremity. The contents of the stomach, in this individual, grains of quartz, mud, and small seeds. It has been asserted that this bird has no cœcal appendages, but resembles the herons in having a single caput cœcum to the colon or rectum; but this, like many other assertions of the "ornithologists," I find incorrect.

The trachea of a male of this species, which I have prepared from a specimen obtained in Edinburgh, differs greatly from that of the other species, as well as from those of the Goosanders. It is nine inches in length; for two inches and a half considerably flattened and very narrow, its average breadth being only two-twelfths. It then gradually enlarges to five-twelfths, becomes round, and so continues to the end. The rings, an hundred and twenty-three in number, are rather broad and firm, gradually more so toward the lower end. There, several united rings form the lower larynx, of which the right side is scarcely enlarged, being similar to that of the female Goosanders; but the left expands continuously from the right in front, into an obliquely ascending rounded bulge, terminating behind in a very thin and narrow, semi-circular ridge, with two lateral membranes, of which the posterior is largest. This, properly the tympanum, communicates with the larynx and gives off the left bronchus, at the distance of two-thirds of an inch from the other. The greatest diameter of the dilatation is an inch and four-twelfths. The bronchi are short, with twenty half-rings. It is pretty well described by M. Temminck, who, however, errs egregiously in saying that the tube of the trachea is composed of "demi-anneaux qui alternent," he having been deceived by the manner in which the rings lock into each other. This I

have already very correctly explained ; and to see it in the present or in any other instance, one has only to hold the extended trachea between him and a strong light.

The plumage is full, soft, firm, and blended. The feathers of the upper part of the head and the nape are elongated, linear-oblong, decurved, with disunited filaments, forming a gradually narrowed crest ; of the rest of the head and upper neck small and soft ; of the lower parts oblong, firm, and glossy, of the sides elongated and curved ; of the shoulders abrupt, of the upper parts ovate ; the scapulars long. The wings are short, rather narrow, convex, and pointed, of twenty-six feathers ; the primaries stout, tapering, pointed, the outer two sinuate on the inner web toward the end, the first longest, the second almost equal, the rest rapidly decreasing ; the secondaries sixteen, the outer short, incurvate, obliquely abrupt, the inner tapering to an obtuse point. The tail short, straight, graduated, of sixteen rather narrow, obtusely pointed feathers, of which the outer is an inch and two-twelfths shorter than the medial. The wings when closed reach to an inch and three-quarters from the end of the tail.

The bill is greyish-blue, with the unguis greyish-white. The iris bright red. The feet light greyish-blue, the webs dusky ; the claws brown, lighter on the ridge. The elongated feathers on the head and nape are white ; a broad patch on the fore part of the cheek and lore, continuous by means of a narrow band with a patch bordering the crest behind, and crossing the occiput, greenish-black ; the rest of the head, throat, neck, and lower parts white ; the upper part of the sides minutely undulated with ash-grey ; some of the smaller wing-coverts and the axillars white, the rest grey. A narrow crescentic band across the lower hind-neck, a short transverse bar on each side before the wing, the middle of the back, the anterior edge of the wing, and the outer edges of the outer and inner webs of the inner scapulars, black ; the rest of the scapulars and the smaller wing-coverts white. The alula, primary coverts, and quills brownish-black ; the secondary quills and coverts deep greenish-black, tipped with white, one of them white on

the outer web, except the margin; the inner four greyish-black. The hind part of the back is gradually shaded into deep ash-grey, of which colour are the upper tail-coverts and the tail-feathers.

Length to end of tail $17\frac{1}{2}$ inches; extent of wings $27\frac{1}{2}$; wing from flexure $8\frac{1}{2}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{4}{12}$, along the edge of lower mandible $1\frac{9}{12}$, its height at the base $\frac{7}{12}$, its breadth behind the unguis $\frac{3}{12}$; tarsus $1\frac{3}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{8}{12}$, its claw $\frac{3}{12}$; third toe $2\frac{1}{12}$, its claw $\frac{5}{12}$; fourth toe 2, its claw $\frac{3}{12}$.

FEMALE.—The female, which is much less, has the crest considerably shorter, and the plumage in general more blended. The bill is pale blue, with the unguis whitish; the iris red; the feet greyish-blue, with a tinge of green, and the webs dusky. The upper part of the head and the hind-neck nearly half-way down are brownish-red; the loreal space and fore part of the cheek reddish-black, its hind part brown. The throat is pure white half-way down; the lower neck all round ash-grey, darker behind; the rest of the lower parts pure white, except the upper part of the sides and some of the lower wing-coverts, which are ash-grey. The middle of the back is greyish-black; the hind part, sides, and the scapulars grey, as is the tail. The wings as in the male, but with none of the smaller coverts dark-coloured.

Length to end of tail $15\frac{3}{4}$ inches; extent of wings 24; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{5}{12}$; wing from flexure $7\frac{4}{12}$; tail $3\frac{2}{12}$; tarsus $1\frac{2}{12}$; first toe $\frac{6}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{4}{12}$; third toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{0}{12}$, its claw $\frac{3}{12}$.

HABITS.—This Smew, which is said to be a native of the arctic regions of both continents, but of much rarer occurrence in America than in Europe, retires southward as the winter approaches, appearing in great numbers in Germany, Holland, France, and Italy, from the middle of October to the end of November, and returning in April. Considerable numbers also betake themselves to the eastern and southern

parts of England ; but to the north of the Humber few are met with, and in Scotland it is everywhere rare, and more so in the more northern districts. It prefers lakes and rivers to the estuaries and open sea, to which it resorts only during severe frost. Its food is said to consist exclusively of fish, for which it dives with the same dexterity as the Mergansers ; but its habits have not been well studied with us, on account of the few opportunities of seeing it alive that have occurred to persons qualified to observe its movements with any degree of interest. I have never met with it on any of my excursions, and have not examined more than two recent entire specimens.

Montagu says “ this is by far the most plentiful species of Merganser that frequents our (southern) coasts and fresh waters in the winters, but, we believe, has never been known to breed in this country. It is naturally shy, and readily takes wing, being as expert in air as it is in water, where indeed, if it is surprised, it is with difficulty shot, by reason of its incessant diving. At the time of writing this account, there are two White Wigeons, as the full-plumed males are sometimes called by the natives, on a piece of fresh-water not very distant from us, but too wary to be shot. The females and young birds are called in the northern parts of Devonshire *Vare-Wigeon*, from a supposed similitude to the head of a *Weesel*, which is denominated *Vare*.” In Ireland it “ is much less common than in England, but more so than in Scotland.”

According to M. Temminck, it “ nestles on the borders of lakes and rivers, and lays from eight to twelve whitish eggs.

YOUNG.—The young, when they appear with us in the beginning of winter, are not entirely similar to the adult female, as has been alleged. One examined by me in January, 1836, was as follows :—

Bill bluish-grey ; feet pale greenish-blue, their webs dusky. The upper part of the head, including the loreal space, a portion of the cheeks, and the occiput, with the hind part of the neck half-way down, yellowish-brown. The upper parts in general ash-grey, tinged with dark brown.

The throat, sides of the head, and upper anterior and lateral parts of the neck, pure white. The alula, primary coverts, and primary quills are dark greyish-brown; the secondary quills greyish-black, as are their coverts, both having the tips pure white, forming two bands across the wing. The lower part of the neck is ash-grey, faintly spotted with dusky; the sides, abdomen, and lower tail-coverts similar; the breast silvery-white.

Length to end of tail $15\frac{3}{4}$ inches; extent of wings $23\frac{3}{4}$; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{5}{12}$; wing from flexure 7; tail $2\frac{3}{4}$; tarsus $1\frac{2}{12}$; first toe $\frac{6}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{0}{12}$, its claw $\frac{3}{12}$.

PROGRESS TOWARD MATURITY.—After the second autumnal moult, the males, according to M. Temminck, “are distinguished by small blackish feathers, which form the large spot at the lateral part of the bill; by some whitish and white feathers dispersed over the head and nape; by the part of the anterior back which is variegated with black and grey feathers; and by the indications of the two black crescents on the sides of the breast. The young of both sexes have the large wing-coverts terminated by a large white space, while the old have white only at their tips.” I have before me a specimen from Holland passing from this to the adult state, having nothing remaining but the reddish-brown feathers of the head and hind-neck, which are variegated with white; but the smaller wing-coverts are only partially white, most of them being ash-grey, and the feathers of the black spot on the cheeks are very slightly edged with whitish. It is not until its third autumn, therefore, that the male acquires its full plumage.

Whether the male changes his colours in summer I have not learned.

REMARKS.—The description of the male above given is from a specimen, obtained fresh on the 2nd of February, 1841, compared with others; that of the female from a skin in perfect plumage. The young birds which I have had opportunities of examining were in the proportion of five to one adult.

URINATOIRES. DIVERS.

Among the Palmipede, or truly aquatic birds, are some, which feeding essentially on fishes obtained in the living state, pursue their prey in its native element, into which they dive for that purpose, not from on wing, but when scattered on its surface, A more appropriate name than that of Urinatorial or Diving birds, could not, I think, be applied to them. Certain other birds, as the Mergansers, are equally divers, and some of themselves feed occasionally on other substances than fish ; but such indications of affinity between conterminous groups present themselves in every department of organic nature, and furnish no argument against the correctness of the nomenclature proposed. The general characters of this order may be expressed thus :—

Birds especially adapted for diving and swimming both in and on the water, and having the body of an elliptical, more or less depressed form ; the neck strong, mostly of moderate length, often elongated ; the head oblong, anteriorly compressed. The bill is strong, tapering, compressed, pointed, opening rather widely, and more or less dilatable at the base, sharp-edged, without lamellæ or denticulations. The tongue slender, trigonal, and pointed ; the œsophagus wide, with moderately thick parietes, and a large proventriculus, having a broad belt of gastric glandules ; the stomach rather large, roundish, with the muscular coat of moderate thickness ; the epithelium rather thick and rugous ; the intestine long, and rather wide, with cœca of moderate length ; the rectum ending in a very large, globose, cloacal dilatation. The nostrils are small, oblong, and basal ; the eyes rather small ; the aperture of the ears very small. The legs generally very short, and much compressed, are placed very far behind, in some of them at the extremity of the body, so as to render a nearly

erect attitude necessary in standing, and to make it impossible for them to walk with speed, or even with ease. The tibia is bare for a very short space only; the tarsus in most cases extremely compressed; the toes four, all much compressed and scutellate; the anterior long, and connected by interdigital membranes; the claws small, and obtuse or flattened. The plumage is close, short, on the head and neck blended; on the upper parts of the body firm and compact, on the lower short, and soft or even silky. The wings small, narrow, and pointed; the tail extremely short.

Although some of the species feed partly on insects, reptiles, crustacea, and mollusca, the general regimen is piscine. They swim, dive, and shoot along in the water, using their wings as well as feet for propelling themselves, with wonderful address and effect. Their heavy body and small wings render it impracticable for them to float, hover, wind, or even turn with quickness, in the air. In flying to and from their places of fishing, repose, or breeding, they proceed with great rapidity, in a direct course, with quick and regular beats of their wings. They stand in an inclined, or nearly erect posture, walk very little, some even being obliged to lie flat and push themselves onward with their feet. They nestle on the ground, or on rocks, sometimes deposit their eggs on the bare surface, or lay them in holes, which they dig for themselves. The young of those that nestle on the ground presently betake themselves to the water, while those produced in elevated places continue some time in the nest. The eggs of most of them may be eaten, and those of some of them are excellent as food; but the flesh of these fish-eating divers is dark-coloured, rank or disagreeably flavoured, and not relished, unless by those who can procure nothing better.

Four families may be distinguished in this order. The *Podicipinæ*, or Grebes, are characterized by their silky plumage, most diminutive tail, and the peculiar conformation of their feet, of which the tarsus is nearly as thin as the blade of a knife, and the toes furnished with expanded lobes in place of membranes. The *Colymbinæ*, or Loons, have the body and neck elongated; the bill slender and pointed; the tarsus extremely compressed; but the anterior toes regularly

webbed. The *Alcinæ*, or Auks, are of a shorter form, with a thicker neck, the bill much compressed, being expanded in a vertical direction; the hind toe wanting; the anterior toes webbed. The last group, that of the *Pelecaninæ*, although it presents a most uniform organization with respect to the digestive organs, contains species very different in form and habits, some of them being adapted for swimming and diving, while others, indicating a transition to the next order, that of the *Mersatores*, plunge from the air into the water, and, in correspondence with this mode of procuring their food, have larger wings and more pointed bills. These four groups, however, are perfectly natural and intelligible.

Only nineteen species of this order occur in Britain; but most of them are extremely numerous in individuals.

The most extraordinary composition of an order of birds known to me is that of M. Temminck's *Pinnatipedes*, in which are placed the genera *Fulica*, *Phalaropus*, and *Podiceps*.

PODICIPINÆ.

GREBES AND ALLIED SPECIES.

THE Podicipinæ, of peculiar aspect, and readily distinguishable from all other birds, have the body of an elliptical form, varying, however, in proportionate length, depressed, especially behind, where it forms, when the legs are extended, a broad, thin edge; the neck long and slender; the head small, oblong, compressed, gradually tapering anteriorly.

The bill is about the length of the head, slender, tapering, compressed, and pointed; the mouth dilatable; the tongue slender, trigonal, tapering, with the tip slit; the œsophagus wide; the proventriculus ovate or bulbiform; the stomach rather large, roundish, with the muscular coat rather thick; the epithelium longitudinally rugous; the intestine long; the cœca rather long and slender; the cloaca very large. All this indicates a piscatory mode of life, and the small linear or oblong nostrils, eyes of moderate size, and extremely narrow nasal apertures, accord with their diving habits. Their feet are placed at the extremity of the body, or rather the tibia is covered by the skin of the body, the extremely compressed tarsus only coming off free; the toes, webbed at the base, and lobed, are so disposed that they fold together into a thin blade, which, in giving the propelling stroke, is expanded into a broad lobate paddle.

Their plumage is remarkably soft and blended, on the lower parts silky; their wings small and pointed, with eleven primaries; their tail a mere tuftlet of downy plumules. The head and neck are frequently ornamented with crests, ruffs, or tippets, which are developed in spring, and disappear in autumn.

The other characters and the modes of life of these birds, will be found in the account given, in the next pages, of the genus *Podiceps*.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. *PODICEPS*. GREBE.

Bill slender, much compressed, tapering, pointed; tarsus extremely compressed; hind toe very small, with two lateral lobes; anterior toes long, obliquely flattened, the outer longest, all with lateral expansions, and connected at the base by webs; claws small, depressed; wings small, with eleven small primaries; tail a slight tuft of minute downy feathers; head and neck decorated with tufts or ruffs.

1. *Podiceps cristatus*. *Crested Grebe*. About two feet in length; the bill longer than the head, carmine-red, with the tips yellowish-grey; a transverse occipital crest, with two more elongated tufts, and a large ruff on the cheeks and fore-neck.

2. *Podiceps rubricollis*. *Red-necked Grebe*. About eighteen inches long; the bill an inch and two-thirds, black, with the base yellow; a short transverse occipital crest, with two more elongated tufts, and a slight ruff on the cheeks and fore-neck.

3. *Podiceps cornutus*. *Horned Grebe*. About fourteen inches long; the bill nearly an inch in length, much shorter than the head, black, with the tips yellow; two large occipital tufts and an ample ruff.

4. *Podiceps auritus*. *Eared Grebe*. About thirteen inches long; the bill nearly an inch in length, much shorter than the head, depressed at the base, black, tinged with blue; two slight occipital tufts, a short ruff, and a tuft of elongated feathers behind each eye.

GENUS II. *SYLBOCYCLUS*. DABCHICK.

Bill moderately stout, much compressed, tapering, pointed; tarsus extremely compressed; hind toe small, broadly mar-

gined ; anterior toes long, obliquely flattened, the outer longest, all with lateral expansions, and connected at the base by webs ; claws small, depressed ; wings small, with eleven small primaries ; tail a slight tuft of minute downy feathers ; head and neck tuftless.

1. *Sylbeocyclus Europæus*. *European Dabchick*. About ten inches in length ; the bill ten-twelfths long, black, with the tips pale ; head and neck without tuft or ruff.

PODICEPS. GREBE.

THE Grebes have the body of an elliptical form, much depressed, especially behind, where it presents, when the legs are laterally extended, a broad thin edge; the neck very long and slender; the head small, oblong, compressed, gradually tapering forward.

Bill rather long, slender, straight, much compressed, tapering, pointed; upper mandible mobile at the base as if jointed, with the dorsal line nearly straight, being slightly declinate and convex toward the end, the ridge convex, the nasal groove basal, narrow, and of considerable length, the sides nearly erect and convex, the edges very sharp and a little inclinate, the tip direct, rather acute; lower mandible with the intercrural space very long and narrow, partly bare, the dorsal line ascending and nearly straight, the crura with their lower outline straight, the sides nearly erect and convex, the edges very sharp and a little inclinate, the tip rather acute.

The mouth, which does not extend so far back as the eyes, is rather narrow, but dilatable by the elasticity of the lower mandible; the palate longitudinally ridged; the upper mandible with a lateral groove in its whole length on each side, and anteriorly two other grooves; the lower more deeply concave, also with two lateral grooves. The tongue long, slender, fleshy, trigonal, nearly flat above, tapering to a slit point. The œsophagus is wide, with moderately thick parietes; the proventriculus ovate, with a broad belt of large cylindrical glandules. The stomach is rather large, roundish, compressed, with the muscular coat rather thick, but not divided into distinct muscles, the tendons roundish, the epithelium longitudinally rugous. The intestine is long and

rather wide, with rather long and slender cæca, and a very large globular cloaca.

Nostrils basal, linear-oblong, in the fore and lower part of the narrow membrane. Eyes rather small; eyelids feathered; a bare space from the eye to the bill. Aperture of ear extremely small.

The femur short, obliquely directed; the tibia long, but passing directly backward, parallel to the spine, and with its muscles enveloped by the skin to near the end, so that the legs are situated at the posterior extremity of the body; tibia bare for a very short space; tarsus short, extremely compressed, its narrow anterior ridge with small scutella, the posterior with two series of small prominent scales separated by a groove. The toes disposed so that with their webs they may fold into a compressed paddle, which in swimming is expanded into wide-spreading lobes; the hind toe very small with two lateral lobes, the upper narrow; anterior toes long, obliquely flattened, the outer longest, all with stiffish lateral expansions marked above with oblique parallel lines, and connected at the base by webs. Claws small, depressed, the inner and outer narrow, the third expanded, and serrulate to the end.

Plumage very soft and blended, on the lower parts silky; on the neck and hind part of the back almost downy, compact on the fore part of the back and wings; the scapulars very long, and decurved; the feathers of the lower parts much curved, very elastic, with the filaments separated and downy, but firm. Wings small, appearing when folded extremely short, owing to the comparative shortness of the hand; primaries eleven, small, the outer two longest; secondaries twenty, short, rounded; humerals ten. Tail a slight tuft of minute downy feathers scarcely distinguishable.

The Grebes are essentially diving piscivorous birds, extensively distributed, but not numerous as to species, inhabiting chiefly fresh water, but also occurring on the sea, and especially in estuaries. They float lightly, but can sink on occasion so as to present to view only the neck and head. In swimming and diving, at which they are extremely expert, their feet, being placed at the posterior extremity of the body,

seem to render a tail unnecessary, that organ being reduced to a diminutive tuft of downy feathers. The extreme compression of the tarsus, and the arrangement of the toes, which folds so as to have little more breadth than it, enable the foot to be brought forward without receiving almost any opposition from the water. The tibio-tarsal joint is so constructed that the tarsus when extended is in a right line with the tibia, and on being contracted continues in the same plane until it comes to form a right angle, but then inclines more and more outward, so that it can not only be bent back so as to be parallel with the tibia, but to extend far beyond it, and thus the sweep of the paddle is very much increased, and to facilitate this the tibia rotates on the femur. In swimming, these birds propel themselves entirely by the feet, and in

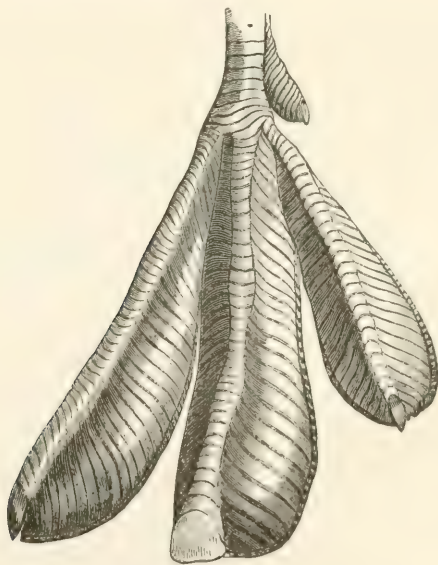


FIG. 74.

diving never use the wings. When molested they seldom rise on wing, but escape by passing into the water. They rise heavily, but have a rather rapid, direct flight, performed by regular beats, and when alighting on the water, come down with great force, gliding along its surface until the momen-

tum is overcome. This probably arises from their want of tail, the great size of which in birds of prey and others enables them to alight without receiving any shock. It would appear that a Grebe cannot alight on land, at least on its feet, and that it even stands with difficulty, generally applying the tarsus to the ground.

They feed chiefly on fish, but also on insects, reptiles, mollusca, and sometimes seeds. It is very remarkable that all of them employ feathers, apparently their own, for the purpose of aiding digestion. They nestle among reeds, sedges, and other aquatic plants, forming a bulky nest, and laying from three to five or six oval, white eggs. The young, covered with down, immediately betake themselves to the water. The moult takes place in summer and autumn. Adults have the head and neck ornamented with elongated feathers, which are produced in spring and fall in autumn. The prevailing colours are dusky or blackish-grey on the upper parts, silvery white beneath. Their flesh is remarkably dark-coloured, disagreeably flavoured, and unfit for food. The silvery white plumage of their lower parts is used for tippets.

PODICEPS CRISTATUS. THE CRESTED GREBE.

GREATER CRESTED GREBE. TIPPET GREBE. CRESTED DUCKER. GAUNT.
CARGOOSE.

Colymbus cristatus. Linn. Syst. Nat. I. 222.

Colymbus Urinator. Linn. Syst. Nat. I. 223. Young.

Podiceps cristatus. Lath. Ind. Ornith. II. 780.

Crested Grebe. Mont. Ornith. Dict.

Grèbe huppé. *Podiceps cristatus.* Temm. Man. d'Ornith. II. 717.

Crested Grebe. *Podiceps cristatus.* Selby, Illustr. II. 394.

Podiceps cristatus. Great Crested Grebe. Jen. Brit. Vert. Anim. 251.

Podiceps cristatus. Bonap. Comp. List, 65.

Male about twenty-four inches in length, with the bill two inches long, slender, compressed, carmine, the ridge dusky, the tips yellowish-grey; a transverse occipital crest, with two more elongated tufts, and a large ruff on the cheeks and fore neck; the upper parts greyish-black, the lower silvery-white, the ruff light red anteriorly, black behind, the sides of the body reddish-brown, most of the secondary quills, the humerals, and anterior edge of the wing white. Female smaller, similar to the male, but with the tufts and ruff shorter. Young without crest or ruff, dusky-grey above, silvery-white beneath, with the sides dusky, and the wings as in the adult. In the second year with the crest and ruff distinct, but short.

MALE.—The Crested Grebe, which is the largest species of its genus, has the body of an elongated elliptical form, much depressed; the neck long and slender; the head rather small, oblong, and compressed. The bill is about the length of the head, straight, slender, compressed, and tapering. The upper mandible, which is possessed of very considerable mobility, has the dorsal line almost straight, slightly declinate and convex toward the tip, the ridge convex, as are the

sides ; the edges sharp and inflected, the tip narrow but rather obtuse. The lower mandible has the intercrural space very long and narrow, the crural outline straight, the dorsal line ascending and straight, the sides convex, the edges sharp and inclinate, the tip narrow and somewhat obtuse,

Internally the upper mandible presents a rather deep and narrow channel, with a lateral groove on each side in its whole length, and anteriorly two other grooves. The lower mandible presents a still deeper and narrower channel. The tongue, an inch and two-thirds in length, is very slender, slightly emarginate, and papillate at the base, trigonal, a little concave above, tapering to a slit point. The œsophagus, which is twelve inches in length, is ten-twelfths in width at the upper part, contracts to six-twelfths as it enters the thorax, then enlarges to nine-twelfths ; its walls rather thick, and its inner coat longitudinally plicate. The proventriculus is ovate, an inch and two-thirds in breadth, with very strong muscular fibres and cylindrical glandules, three-twelfths long, and nearly one-twelfth in breadth. The stomach is large, of a roundish compressed form, two inches four-twelfths in breadth ; its muscular coat very thick, but composed of single fasciculi, not separated into distinct muscles, the tendons roundish, and half an inch in diameter ; the cuticular lining very thick, moderately dense, and rugous. There is a rather large roundish pyloric lobe, and the pylorus has a thickened margin, but no valves. The intestine, which is forty-three inches long, is half an inch wide in its duodenal portion, then gradually contracts to four-twelfths, but enlarges to five-twelfths near the cœca, which come off at the distance of three inches from the extremity, and are an inch and a half in length, narrow at first, enlarged to three-twelfths near the end, with their extremity rounded. The rectum is half an inch in width, and enlarges into a globular cloaca, nearly two inches in diameter.

The eyes are small, their aperture three-twelfths. The nostrils linear-oblong, pervious, three-twelfths-and-a-quarter in length, sub-basal. The aperture of the ear, which is round, measures only one-twelfth across, being so small as to be with difficulty found. The feet being placed at the poste-

rior extremity of the body, the tibia, which is long, is enveloped by the skin, which leaves only a quarter of an inch of it exposed and bare ; the tarsus short, extremely compressed, having a breadth of scarcely two-twelfths of an inch, but a depth of eight-twelfths at its lower part ; on its anterior edge is a row of small scutella, twenty in number, externally three rows of plates, and behind two series of small prominent scales, separated by a groove. The first toe is very small, elevated, with two lateral membranes, of which the outer or upper is very narrow ; the anterior toes long, connected at the base by a membrane, and having on both sides an expanded margin, marked with oblique parallel lines ; the first and second toes destitute of scutella, the third with thirty, the fourth, which is longer, also with thirty, but both without any toward the end. The claws are flattened, that of the middle toe broader, and, with the fourth, serrulate,

The plumage is very soft and blended, on the upper parts slightly glossed, on the lower silky. There is on the occiput a transverse crest of linear-oblong feathers, of which the lateral are elongated into two tufts ; and on the sides and upper part of the neck is a large ruff. The wings are small, narrow, acute, very concave, with eleven primaries, twenty-four secondaries, and ten tertiaries or humerals. The second quill is longest, the first scarcely two-twelfths shorter, the other primaries rapidly graduated ; the secondaries abrupt, with an acumen. The scapulars are very large and oblong. The tail is a slight tuft of fourteen feathers, circularly arranged, about an inch and a half long, with feeble shafts and loose downy filaments. The first and second quills are distinctly cut out on their inner web toward the end, the second and third on the outer.

The upper mandible has the ridge blackish-brown, the sides carmine to beyond the nostrils, in the rest of their extent and along the edge to the base yellowish-grey ; the lower mandible carmine, with the edges and tip yellowish-grey. The iris is bright carmine, the edges of the eyelids of a duller tint of the same ; a bare space from the eye to the mouth dusky-green. The tarsi are dusky-green externally, greenish-yellow internally ; the toes dusky beneath, greenish-yellow

above, dusky toward the margins, as are the claws. The upper part of the head and the occipital tufts are greyish-black tinged with green; the ruff light brownish-red anteriorly, greyish-black behind; from the upper mandible over the eye is a reddish-white band, and part of the throat and cheeks is white. Below the ruff the fore part of the neck is white, tinged with brown on the sides, the hind parts blackish grey. The lower parts of the body, and the under surface of the wings, are silvery-white; the sides under the wings reddish-brown, streaked with dusky. The upper parts are greyish-black, tinged with brown. The anterior edge of the wing, all the feathers on the humerals, with a few of the lower scapulars, and all the secondary quills, except part of the first and three of the inner, are white.

Length to end of tail $23\frac{1}{2}$ inches, to end of wings $20\frac{1}{2}$, to end of toes $25\frac{1}{2}$; extent of wings 34 ; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible $2\frac{3}{4}$; wing from flexure $7\frac{8}{12}$; tarsus $2\frac{7}{12}$; hind toe $\frac{9}{12}$, its claw $\frac{2}{12}$; second toe $2\frac{2}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{1}{2}$, its claw $4\frac{1}{12}$; fourth toe $2\frac{1}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female, which is considerably smaller, differs from the male in having the ruff and occipital tufts shorter; but in other respects is similar.

Length to end of tail 19 inches; extent of wings 32; bill along the ridge $1\frac{9}{12}$, along the edge of lower mandible $2\frac{1}{2}$; wing from flexure $7\frac{5}{12}$; tarsus $2\frac{1}{2}$.

VARIATIONS.—In both sexes great differences are observed as to size, but the colours undergo little change.

HABITS.—Few birds are more peculiarly aquatic than the Grebes, and of them none is more so than the present species, which swims and dives with surprising dexterity, prefers plunging into the water to using its wings when in any way alarmed, and seldom betakes itself to land, where it is unable to walk. In winter it occurs along our sea-coasts, and especially in estuaries, but seldom in large numbers, and scarcely ever associating with other birds; none in fact, unless per-

haps the Red-throated Diver, agreeing so closely in habits as to render companionship with them advantageous. It has the appearance of sitting deep in the water, the breadth of its body being greater than its height; and, when apprehensive of danger, it sinks still more, in the manner of the Loons and Cormorants, which it also resembles in its mode of diving. If pursued with a boat, it still prefers gliding beneath the waters, and, on emerging at a distance, merely raises its head and neck in order to breathe, when it again dives, and, unless severely wounded, is sure to make its escape. In open weather in winter it is also seen on lakes and rivers, and in summer it resides exclusively in fresh water. Its food consists of fishes of various kinds, aquatic insects, reptiles, and crustacea. Along with remains of these are usually found in its stomach numerous large curved feathers, which it probably picks up as they float on the water, and which are, no doubt, intended to facilitate digestion.

Although indigenous, it is much more uncommon in summer than in winter, so that most of the individuals seen on our coasts are probably migratory. Montagu states that it breeds in the meres of Shropshire and Cheshire, and in the fens of Lincolnshire. The nest, he says, is large, composed of a variety of aquatic plants, and is not attached to anything, but floats among the reeds and flags, penetrated by the water; the eggs four, about the size of those of a pigeon. They are, however, much larger. Not having seen a nest of this species, I can only compare the accounts of it given by authors, and state the result, which is, that it is bulky, rudely constructed, composed of flags, rushes, leaves, and stems of reeds, as well as other plants, and placed either on the ground among rushes or reeds, or over the water, and supported by the broken stems, or secured by being jammed in amongst them. Dr. Richardson, who states that this species is abundant in the secluded lakes of the mountainous districts of the fur countries of North America, says the nests are formed of a large quantity of grass, placed among reeds and carices, and rise and fall with the water.

Mr. Audubon, describing its habits as observed in the

United States, informs us that it returns from the north about the beginning of September, and proceeds as far as the Mexican territories, a few only remaining on the lower parts of the Ohio, the Mississippi, and the neighbouring lakes. "They pass swiftly through the air, at a height of about a hundred yards, in flocks of from seven or eight to fifty or more, proceeding in a loose body, and propelling themselves by continued flappings, their necks and feet stretched out to their full length. I have observed them thus passing in autumn, for several years in succession, over different parts of the Ohio, at all hours of the day. When about to alight on the water, these birds glide swiftly downward, with their wings half-closed, and produce a sound not unlike that of a hawk stooping toward its prey. Their velocity is so great at this moment, that on alighting they glide on the surface of the water for twenty or thirty yards, leaving a furrow in their wake. In a few moments they are all engaged in washing and cleaning themselves; after which they dive in pursuit of the fishes on which they feed, and which they secure by following them in the manner of Divers and Cormorants. They are exceedingly quick-sighted, and frequently elude by diving the shot intended for their destruction, seldom, after being chased, raising more than their bill above the water, and but rarely making for the shore, unless when nearly exhausted. When in ponds, they may easily be caught with fishing-hooks placed on lines near the bottom. They very rarely fly in your presence, and they leave the ponds at night. If forced to rise on wing, they run paddling on the water for several yards before they rise, and fly several times round a pond of thirty or forty yards before they attain the level of the tree tops, for they never fly through the woods. When once high in the air, they move in a direct course with speed towards some other pond or the nearest river. The food of this species consists of fishes, aquatic insects, and small reptiles, together with the seeds of water plants."

The eggs, three or four in number, are of a rather elongated form, two inches and a quarter in length, an inch and a half in breadth, smooth unless at the two ends, greenish-

white, but generally soiled to a yellowish-white, and covered with dirt in the form of brown streaks and spots.

YOUNG.—In their first winter the young have no appearance of a ruff, and very little of the occipital tufts. The bill is yellowish-green, with the ridge dusky, and the tips paler. The feet are dusky greenish-brown, the inner part of the tarsus, and the upper surface of the toes lighter. The upper part of the head is greyish-black, tinged with brown, the hind neck more grey. From the bill to the eye is a band of yellowish-grey, which does not extend over the eye; the cheeks and sides of the neck are pale brownish-grey; the lower parts silvery-white, the sides dusky; the upper parts blackish-grey, and the wings marked with white, as in the adult.

PROGRESS TOWARD MATURITY.—M. Temminck informs us that “the young, up to the age of two years, have no indication of crest or ruff; the forehead and face are white; on these parts, as well as on the upper part of the neck, are bands of a blackish-brown, disposed in all directions, and forming zig-zags; the iris of a pale yellow; the bill of a livid reddish tint. At the age of two years and after the moult, both sexes have a very short occipital crest, bordered with white feathers; the face, which is white, is not shaded into reddish; a blackish band of irregular form extends from the bill under the eyes, and ends at the occiput.” I have never seen individuals agreeing with these descriptions, and am inclined to think that the young acquire their full plumage when two years old. In the state presently to be described, and in which I have frequently found them, I imagine they must be in their second winter, when the crest and ruff are formed, though short, and the latter already tinged with red.

A male, killed near Stirling, in the middle of December, 1838, and examined when fresh, had the occipital crest and the ruff both distinct, the longest feathers in each an inch and two-twelfths long. The upper mandible with the ridge dusky, the point and edges horn-colour, and a carmine streak from the base to beyond the nostrils; the lower mandible

carmine with the edges and point horn-colour. The iris bright carmine, the edges of the eyelids paler : the bare space from the eye to the bill dusky. The feet are greenish-brown externally and beneath, greenish-yellow internally and above, dusky toward the edges. The upper parts are greyish-black, the ruff and sides of the neck tinged with brown, the former with several dusky longitudinal streaks. The same parts of the wing white as in the adult. A band from the nostril to the eye, the cheeks, and lower parts white, but the sides dusky. The stomach large, moderately muscular, with the inner coat rugous, contained remains of fishes, numerous vertebrae and other bones, with some green confervæ, and a quantity of feathers.

Length to end of tail $21\frac{1}{2}$ inches, to end of wings $19\frac{3}{4}$, to end of claws $26\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$, from nostril to point $1\frac{5}{12}$, along the edge of lower mandible $2\frac{1}{2}$; wing from flexure $7\frac{4}{12}$; tail $1\frac{10}{12}$; tarsus $2\frac{1}{2}$; hind toe $\frac{8}{12}$, its claw $\frac{2}{12}$; second toe $2\frac{1}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{1}{2}$, its claw $\frac{5}{12}$; fourth toe $2\frac{8}{12}$, its claw $\frac{4}{12}$.

A female, also killed on the Forth, and examined on the 9th January, 1841, had the occipital crest considerably developed, the longest feathers being an inch in length, the longest ruff-feathers an inch and two-twelfths. The upper mandible dusky grey, passing into pale bluish-grey at the end, the sides to beyond the nostrils faint carmine; the lower mandible light carmine, with the margins and tips pale bluish-grey. The iris deep carmine; the margins of the eyelids paler; the bare loreal space dusky. The feet dusky-brown with a tinge of grey, the upper surface of the toes dull greenish-yellow, with irregular dusky marks over the joints. The upper part of the head glossy greyish-black; an oblong spot before the eye white; the throat and cheeks white, the latter becoming tinged with brown behind, and faintly mottled with dusky; many of the ruff feathers black, mixed with brownish-white toward the end, so as to seem streaked; the hind neck dark grey; the upper parts of the body blackish-grey; the wings dusky-grey, with thirteen secondaries white, four partly so, the rest dusky; the fore edge of the wing, and all the feathers of the humerus, with a few of the lower sca-

pulars, white; all the lower parts pure silky white, including the lower wing-coverts, but not the feathers on the upper part of the sides under the wings, which are greyish-black toward the end. The œsophagus twelve inches long, nine-twelfths wide at the top, narrowed to five-twelfths, and in the thorax widened to one inch; the stomach an inch and five-twelfths in breadth.

Length to end of tail $20\frac{3}{4}$ inches; extent of wings 32; wing from flexure $7\frac{1}{4}$; bill along the ridge $1\frac{9}{12}$, along the edge of lower mandible $2\frac{1}{4}$; tarsus $2\frac{4}{12}$; first toe $\frac{8}{12}$; its claw $\frac{1}{12}$; second toe 2, its claw $\frac{3}{12}$; third toe $2\frac{1}{2}$, its claw $\frac{4}{12}$; fourth toe $2\frac{8}{12}$, its claw $\frac{4}{12}$.

PODICEPS RUBRICOLLIS. THE RED-NECKED GREBE.

GREY-CHEEKED GREBE.

Colymbus rubricollis. Gmel. Syst. Nat. I. 592.

Podiceps rubricollis. Lath. Ind. Ornith. II. 783.

Red-necked Grebe. Mont. Ornith. Dict. and Suppl.

Grebe jou-gris. *Podiceps rubricollis.* Temm. Man. d'Orn. II. 720.

Red-necked Grebe. *Podiceps rubricollis.* Selby, Illust. II. 392.

Podiceps rubricollis. Red-necked Grebe. Jenyns, Brit. Vert. Anim. 252.

Podiceps rubricollis. Bonap. Comp. List, 65.

Male about eighteen inches long, with the bill an inch and two thirds, rather stout, compressed, black, with the base yellow; a short transverse occipital crest, with two more elongated tufts, and a slight ruff on the cheeks and fore neck; the upper parts greyish-black, the lower silvery-white, the ruff light grey edged with white, the fore part and sides of the neck rich brownish-red, the sides of the body streaked with dusky, several of the outer secondary quills white. Female smaller, similar to the male, but with the tufts and ruff shorter. Young without crest or ruff, dusky-grey above, silvery-white beneath, the cheeks greyish-white, the fore neck brownish-grey; the lower part of the neck and the sides of the body spotted or streaked with dusky.

MALE.—The Red-necked is considerably inferior in size to the Crested Grebe, from which it differs in having the bill stouter and differently coloured, the body proportionally shorter and broader, and in other particulars easily discovered on comparing specimens or good descriptions. The bill is nearly as long as the head, straight, rather stout, compressed, and tapering. The upper mandible, which, as in all the other species, is very flexile, has the dorsal line straight for

half its length, then declinate and a little convex, the ridge convex, as are the sides, the edges sharp and inflected, the tip narrow but rather blunt. The lower mandible has the intercrural space very long and narrow, the crural outline straight, the dorsal line ascending and slightly convex, the sides nearly erect and flattened, the edges sharp and inclinate, the tip narrow and somewhat obtuse.

Internally the upper mandible presents a very narrow groove, with three longitudinal ridges. The lower mandible forms a still narrower groove. The tongue, an inch and a half in length, is very slender, trigonal, tapering, with a thin horny point. The œsophagus, ten inches and a half in length, is nine-twelfths in width at the upper part, then contracts to half an inch ; but the proventriculus forms a large ovate sac, an inch and three fourths in breadth. The stomach is very large, of a roundish compressed form, moderately muscular, its tendons circular, and the epithelium thick, soft, and with prominent longitudinal rugæ. The proventricular glandules are very large, being nearly half an inch in length. There is a small pyloric sac. The intestine, which is thirty-five inches long, is half an inch wide in its duodenal part, but diminishes to a quarter of an inch. The cœca are two inches long, two-twelfths in width, narrower at the commencement, and three inches distant from the extremity of the rectum, which has a large globular cloaca an inch and a half in width.

The eyes are small, their aperture three-twelfths. The nostrils linear, two-and-a-half-twelfths long. The tibia bare for a quarter of an inch ; the tarsus extremely compressed, seven-twelfths in depth, with large lateral plates, sixteen anterior small scutella, and behind a double row of prominent, compressed, rounded scales ; the hind toe very small, with an inferior lobe ; the second toe with twenty-five scutella, the third with thirty-five, the fourth forty-five ; the anterior toes connected by membranes at the base, and in the rest of their extent margined with broad lobes marked with parallel oblique lines. The claws are flattened, that of the middle toe largest and serrulate.

The plumage is soft, blended, glossy above, silky beneath ;

on the head and neck very soft ; the occiput with a flattened crest, forming two tufts, and the feathers on the cheek and throat elongated behind into a slight ruff. The wings are small, narrow, acute, concave, with eleven primaries, twenty-four secondaries, and ten humerals ; the first and second quills are about equal, and have the inner web cut out toward the end, the second and third on the outer. The tail extremely diminutive, rounded, being a tuft of downy feathers an inch and a quarter in length.

The bill is black, paler at the end, and light yellow at the base, the ridge excepted. The eyes are carmine. The feet greenish-black externally, yellow internally, with the margins of the lobes dusky ; the claws dusky, edged with paler. The upper part of the head is greyish-black ; the cheeks and throat ash-grey, the ruff edged above with white. The fore part and sides of the neck are rich brownish-red ; the lower parts silvery-white, the sides streaked with dusky. The upper parts are greyish-black, with the edges of the feathers lighter. The outer secondaries, to the number of about twelve, are white, the rest and the humerals dusky. The anterior edge of the wing is narrowly marked with white ; but the feathers on the humerals are not of that colour, as in the Crested Grebe.

Length to end of tail 18 inches ; extent of wings 30 ; wing from flexure 7 ; tail $1\frac{1}{4}$; bill along the ridge $1\frac{9}{12}$, along the edge of lower mandible $2\frac{2}{12}$; tarsus $2\frac{2}{12}$; hind toe $\frac{8}{12}$, its claw $\frac{1}{12}$; second toe 2, its claw $\frac{3}{12}$; third toe $2\frac{4}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{1}{2}$, its claw $\frac{4}{12}$.

FEMALE.—The female is similar to the male, but smaller.

HABITS.—This species is said by various authors to be common in the eastern provinces of Europe, but of comparatively rare occurrence in the western. It does not appear that it has been found breeding in any part of Britain, although in winter it is not more rare with us than the Crested Grebe, being occasionally found along the coasts, and in estuaries, as well as sometimes in fresh water. I have procured it, as well as all our other species, from the Firth of

Forth, and it has been found in Northumberland by Mr. Selby, in Slapton Ley in Devonshire, and in various other parts, but only in winter and spring, and in so far as I have seen, only in the immature state. Dr. Richardson found it very common in the fur countries of North America, and Mr. Audubon met with it "from New York to Maine, in the winter season, when old and young were generally in about equal numbers." I am not aware of any direct observations that have been made respecting its habits, which, however, judging from its size and form, may be inferred to be similar to those of the Crested Grebe. M. Temminck indeed states that it "inhabits rivers, lakes, and the margins of the sea, but in greater number on fresh water; feeds on small fishes, fry, reptiles, hard-winged insects, and plants." The substances which I have found in its stomach were remains of fishes, green fibrous matter, apparently *confervæ*, some particles of quartz, and a great quantity of feathers, either its own, or of some other Grebe. According to the author above mentioned, its nest is similar to that of the Crested Grebe, and it lays three or four eggs of a whitish-green, appearing as if soiled with yellowish and brown. One described by Mr. Audubon was two inches in length, an inch and a quarter in breadth, and of a uniform pale greenish-white.

YOUNG.—The young when newly fledged I have not seen. In winter, when they first appear on our coasts, they are as follows:—There are two slight tufts on the occiput, and the cheeks are rather full, but neither the crest nor the ruff are distinct. The upper mandible is entirely yellow, with the exception of a dusky streak on the ridge near the end; the lower mandible black, with the sides of the base yellow, and the tip dusky horn-colour. The upper part of the head blackish-grey; the hind-neck dusky-grey; the upper parts of the body greyish-black, all the feathers edged with dull grey; some of the humeral-coverts are white, as are about twelve of the secondary quills; the throat and cheeks are white, shaded into grey; the fore part and sides of the neck dull grey; its lower part beneath, with the breast silvery white; but the sides of the lower neck faintly streaked with dusky, and those

of the body more distinctly so. The feet dark greenish-brown externally, paler internally.

PROGRESS TOWARDS MATURITY.—A male individual shot near Stirling, in December 1838, and which appears to be in its second winter, may be described thus :—The occipital tufts and the ruff are pretty distinct. The bill is black, irregularly streaked with yellow, and paler toward the tip, with the basal margins of the upper mandible and the base of the lower, to the extent of half an inch, pale yellow. The feet greenish-black externally, dull yellowish-green internally. The upper part of the head is dusky-grey, its sides gradually shaded into greyish-white, of which colour is the throat; below the ruff, the neck for two inches and a half, is pale grey in front and on the sides, and beyond this the lower parts are silvery-white; but the lower part of the neck, its sides, and those of the body, are spotted with dusky, and the shafts of the feathers toward the end, are black. The hind-neck is dusky-grey, tinged with brown. The upper parts of the body are greyish-black, with the feathers margined with dull grey. The primary quills are greyish-black on the outer, dusky-grey on the inner web; the two first secondaries similar, the next with a patch of white, the next ten almost entirely white, three with white toward the base, the rest and the tertiaries black; the lower wing-coverts, some of the feathers on the fore edge of the wing, and a patch across the humerus, white. The contents of the stomach were vertebræ and other bones of fishes, green confervæ, and a quantity of feathers.

Length to end of tail $17\frac{1}{2}$ inches; extent of wings 30; bill along the ridge $1\frac{0}{12}$; along the edge of lower mandible $2\frac{1}{12}$; wing from flexure $7\frac{1}{2}$; tarsus $2\frac{2}{12}$; outer toe $2\frac{7}{12}$, its claw $\frac{4}{12}$.

REMARKS.—In all stages this species may easily be distinguished from *Podiceps cristatus*, by the form and colour of its bill, which is much thicker, and has the base coloured with yellow instead of carmine.

PODICEPS CORNUTUS. THE HORNED GREBE.

SCLAVONIAN GREBE. HORNED DOBCHICK.

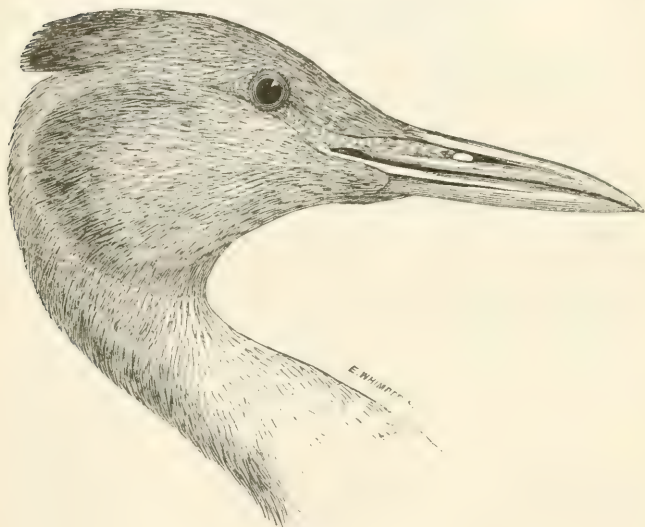


FIG. 75.

Colymbus cornutus. Gmel. Syst. Nat. I. 591.

Podiceps cornutus. Lath. Ind. Ornith. II. 782.

Sclavonian Grebe. Mont. Ornith. Dict. and Suppl.

Grebe cornu ou Esclavon. *Podiceps cornutus.* Temm. Man. d'Ornith. II. 721.

Horned Grebe. *Podiceps cornutus.* Selby, Illustr. II. 397.

Podiceps cornutus. Sclavonian Grebe. Jennyns. Brit. Vert. Anim. 252.

Podiceps cornutus. Bonap. Comp. List. 65.

Male about fourteen inches long, with the bill much shorter than the head, nearly an inch in length, rather stout, compressed, black, with its tips yellow; two large light-red occipital tufts, and an ample black ruff; the upper parts greyish-

black ; the lower silvery-white ; with the fore part of the neck and the sides of the body red. Female similar, but somewhat smaller. Young with the bill greyish-blue, with the base and tip yellow ; slight occipital tufts, but no ruff ; the upper parts greyish-black ; the lower silvery-white, with the sides dusky ; the cheeks and throat white ; part of the fore-neck light grey.

MALE.—This species is very much inferior in size to the Red-necked Grebe, and slightly superior to *Podiceps auritus*, from which, however, it is easily distinguished by its differently-formed bill. The body is elliptical and depressed ; the neck long and slender, the head small, oblong, and compressed. The bill is shorter than the head, straight, rather stout, compressed, acute, being of the same form as that of *Podiceps rubricollis*, though proportionally shorter. The upper mandible has the dorsal line straight for half its length, then declinate and convex, the nasal sinus oblong, more than a third of its length, the ridge convex, gradually narrowed. The lower mandible with the angle long and very narrow, the dorsal line short, ascending, and straight, the sides a little convex, the tip acute, the gape-line straight.

The œsophagus is eight inches and a half in length, of the uniform width of three-twelfths. The proventricular part very large, being an inch and three-fourths in length, and nine-twelfths in breadth ; its glandules very large and cylindrical. The stomach is an inch and three-fourths in length, an inch and an eighth in breadth when contracted, but when dilated an inch and a half. Its walls are moderately muscular, nearly in the same degree as in the Rook, and showing some appearance of a division into lateral muscles ; the tendons roundish and defined, or elliptical when contracted. There is a small pyloric lobe. The intestine is three feet five inches in length, from four to two-and-a-half-twelfths in width ; the rectum two inches and a half ; the cœca two inches and a quarter, two-twelfths wide at the commencement, enlarging to three-twelfths, and rounded at the end.

The nostrils oblong, a twelfth and a half in length ; the aperture of the eye nearly three-twelfths. The tibia is feathered to within a quarter of an inch of the joint ; the

tarsus short, extremely compressed, five-twelfths in depth, with a double row of prominent scales behind ; the toes as in the other species, as are the claws.

The plumage downy on the hind-neck, firm and glossy on the upper parts of the body, silky on the lower. On the head is a tuft of elongated soft feathers on each side of the occiput, and a more expanded tuft on each side of the upper part of the neck. The wings are small and convex ; the primaries rounded at the end, the first abruptly cut out on the inner web, and slightly shorter than the second. The tail a slight tuft of downy feathers.

The bill is bluish-black, with the tips of both mandibles yellow. The iris is carmine, with an inner circle of white ; the basal loreal space carmine ; the edges of the eyelids paler. The feet are dusky, tinged with grey externally, dull yellow internally and on both edges of the tarsus ; the claws brown. The upper part of the head and the ruff are glossy black, as are the cheeks and throat ; a band from the bill over the eye, including the elongated occipital tuft, yellowish-red. The fore part of the neck, to the extent of three inches, is brownish-red, as are the sides of the body ; the rest of the lower parts silvery-white. The upper parts are greyish-black ; the feathers edged with dull grey. About ten of the secondary quills, with some of the feathers on the humerus, are white ; the other quills and the tertials greyish-black.

Length to end of tail 14 inches ; extent of wings 24 ; wing from flexure $5\frac{3}{4}$; tail $1\frac{1}{2}$; bill along the ridge $\frac{11}{12}$; along the edge of lower mandible $1\frac{1}{4}$; tarsus $1\frac{3}{4}$; hind toe $\frac{6}{12}$, its claw $\frac{1}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{2}{12}$; third toe $1\frac{9}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{11}{12}$, its claw $\frac{3}{12}$.

FEMALE.—The female is similar to the male, but somewhat smaller, with the tufts and ruff a little shorter and less deeply coloured.

HABITS.—This species is not extremely uncommon in Scotland during the winter, and in frosty weather, when it betakes itself to the estuaries, is sometimes shot in considerable numbers. In mild weather it resorts to lakes and rivers.

As it does not breed with us, its habits are little known ; for in winter, it is impossible at any distance to distinguish it from the next species ; and all that can be said of either is equally applicable to the other. They swim and dive in the most expert manner, feed on fishes, and swallow feathers, like the rest. In two individuals, from the river Forth, which I examined in January, 1838, the stomach was filled with green confervæ, feathers, some shells, coleopterous insects, and particles of quartz. It occurs equally in winter on the eastern and southern coasts of England, and has been found breeding in the fenny districts, though in very small numbers. According to M. Temminck, it is more abundant in the eastern and northern parts of Europe than elsewhere, occurring only accidentally in Holland, France, and Switzerland. It appears to be at least as common in North America as in Europe.

“The Horned Grebe,” says Mr. Audubon, “is abundant during autumn and winter on the large rivers or inlets of the Southern States, but rare along the coasts of the middle and Eastern Districts. It is particularly fond of those streams of which the borders are overgrown by rank sedges and other plants, and are subject to the influx of the tide. In such places they enjoy greater security while searching for their food, than in ponds, to which, however, they for the most part retire at the approach of the pairing season, which commences early in February. At that time one might be apt to think that these birds could scarcely fly, as they are then rarely seen on wing ; but when they are pursued, and there happens to be a breeze, they rise from the water with considerable ease, and fly to a distance of several hundred yards. In December and January I have never procured any having the least remains of their summer head-dress ; but by the 10th of March, when they are on their journey towards the north, the long feathers of the head were apparent. These tufts seem to attain their full development in the course of a fortnight or three weeks, the old birds becoming plumed sooner than the young, some of which leave the country in their winter dress.

“Although the greater number of these birds go far north-

ward to breed, some remain within the limits of the United States during the whole year, rearing their young on the borders of ponds, particularly in the northern parts of the State of Ohio, in the vicinity of Lake Erie. Two nests which I found were placed at a distance of about four yards from the water's edge, on the top of broken down tussocks of rank weeds. The materials of which they were composed were of the same nature, and rudely interwoven to a height of upwards of seven inches. They were rather more than a foot in diameter at the base, the cavity only four inches across, shallow, but more neatly finished with finer plants, of which a quantity lay on the borders, and was probably used by the bird to cover the eggs when about to leave them. There were five eggs in one nest, seven in the other; they measured one inch and three-quarters in length, by one inch and two-and-a-half eighths; their shell was smooth, and of a uniform yellowish cream colour, without spots or marks of any kind. I could not ascertain if both the parent birds incubate; but as I saw two pairs on the pond, I am inclined to think that they do. The nests were not fastened to the weeds around them, nor do I conceive it probable that they could be floated, as various writers assert they are at times." Thus M. Temminck:—"Nestles among the reeds, or constructs a floating nest, composed of plants, and attached to the stems of rushes;" and Mr. Selby:—"It breeds among the reeds and sedges, constructing a large nest of decayed vegetables, roots, &c., and which is calculated to rise and fall under the influence of the tide."

YOUNG.—In its first winter, the young bird has the bill dark bluish-grey, with the basal half of the lower mandible, the basal margins of the upper, and the tips of both yellow. The iris is carmine; the loreal space dusky. The feet bluish-grey externally, tinged with greenish-yellow internally. There are slight occipital tufts, but no ruff. The upper part of the head and the hind neck are greyish-black, as are the upper parts of the body, with the feathers edged with greyish. The throat, cheeks, and space ultimately occupied by the ruff, are white; below this the fore neck for nearly two

inches, is pale grey ; the rest of the lower parts silvery white, but the sides marked with dusky. The same parts of the wing are white as in the adult. In a male in this state, shot in December, 1838, the œsophagus was eight inches long ; the proventricular part an inch and a quarter ; the stomach broadly elliptical, an inch and three-fourths in length, an inch and a-half in breadth ; its walls moderately muscular ; the intestine three feet four inches long ; the cœca two inches and a quarter.

REMARKS.—A curious mistake has been made by Mr. Jenyns in describing the young. He says:—"Throat and cheeks pure white ; a narrow line of the same colour extends from behind the ears on each side to the back of the head." This arises from M. Temminck's having said, "*le blanc pur de la gorge s'étend au-dessous des yeux en ligne horizontale, et se dirige jusque très en arrière sur l'occiput ;*" which is correct, only when thus translated: the pure white of the throat extends over the cheeks in a horizontal direction, and proceeds very far back on the nape, leaving but a narrow band of dusky in the middle of that part.

PODICEPS AURITUS. THE EARED GREBE.

Colymbus auritus. Linn. Syst. Nat. I. 222.

Podiceps auritus. Lath. Ind. Ornith. II. 781.

Eared Grebe. Mont. Ornith. Dict. and Suppl.

Grebe Oreillard. *Podiceps auritus.* Temm. Man. d'Ornith. II. 725.

Eared Grebe. *Podiceps auritus.* Selby, Illustr. II. 157.

Podiceps auritus. Eared Grebe. Jenyns, Brit. Vert. Anim. 253.

Podiceps auritus. Bonap. Comp. List. 64.

Male about thirteen inches long, with the bill much shorter than the head, nearly an inch in length, rather slender, depressed at the base, compressed and a little recurved toward the end, black tinged with blue; two slight dusky occipital tufts, a short black ruff, and a tuft of elongated orange-red feathers from behind each eye; the upper parts greyish-black, the lower silvery-white, the sides light red streaked with black. Female similar, but somewhat smaller. Young without tufts, the upper parts blackish-brown, the lower silvery white with the sides dusky, the throat and part of the cheeks greyish-white, part of the fore neck brownish-grey.

MALE.—Somewhat inferior in size to the Sclavonian Grebe, this species is distinguished from it by the peculiar form of its bill, which is curved a little upwards at the end, and depressed at the base. The body is elliptical and depressed; the neck long and slender; the head small, oblong and compressed. The bill is shorter than the head, slender, as broad as high at the base, compressed and slightly recurved toward the end. The upper mandible has the dorsal line slightly declinate and straight to near the middle, then direct or a very little elevated, and at the tip slightly declinate, the ridge convex, as are the sides, the edges inclinate, and the tip rather acute. The lower mandible with the angle long and very narrow, the outline of the crura slightly

convex, the dorsal line ascending and slightly convex, the sides sloping a little outwards, the edges direct, the tip narrow and ascending; the gape-line slightly rearcuate.

The œsophagus is seven inches and a-half in length, four-twelfths in width. The proventriculus ovate, ten-twelfths in breadth. The stomach is very large, elliptical, somewhat compressed, two inches in length, an inch and a-half in breadth; its muscular coat moderately thick, its tendons roundish, the epithelium thick and longitudinally rugous. There is a small pyloric lobe. The intestine is three feet nine inches long, from four-twelfths to two-and-a-half-twelfths in width; the cœca two inches long, two-twelfths-and-a-half wide; the rectum two inches in length, with a globular cloaca eight-twelfths in diameter.

The nostrils linear, a twelfth-and-a-half in length; aperture of the eye two-twelfths-and-a-half. The tarsi, toes and claws as in the last species. The plumage very soft and blended, glossy on the upper parts, silky beneath. The feathers of the occiput are a little elongated, and form two small tufts. On each side of the head is a tuft of very long, linear, glossy feathers, rising from over and behind the eye; and there is a slight ruff on the cheeks and neck. The wings are small and convex; the outer three primaries acute, the first longest, and with the inner web abruptly cut out; the inner primaries rounded; the secondaries obliquely rounded, with an acumen. The tail a slight tuft of downy feathers, an inch and a half in length.

The bill is black, tinged with blue. The iris deep carmine. The feet greyish-black externally, greyish-green internally. The head and upper part of the neck all round, the hind-neck, and the upper parts of the body, and wings, are brownish-black. The lower parts silvery-white, but the sides light red, streaked with black. The primary quills and coverts are greyish-brown, with a large portion of their inner webs white, of which colour also are most of the secondary quills.

Length to end of tail 13 inches; extent of wings 22; wing from flexure $5\frac{9}{12}$; tail $1\frac{1}{2}$; bill along the ridge $\frac{1}{12}$, along the edge of lower mandible $1\frac{2}{12}$; tarsus $1\frac{9}{12}$; hind toe

$\frac{5}{12}$, its claw $\frac{1}{12}$; second toe $1\frac{1}{2}$, its claw $\frac{2}{12}$; third toe $1\frac{9}{12}$, its claw $\frac{3}{12}$; fourth toe 2, its claw $\frac{3}{12}$.

FEMALE.—The female resembles the male, but is somewhat less.

HABITS.—Little can be said of the habits of this species as distinguished from those of the preceding. It is said to be abundant in the northern parts of Europe, to occur also in America, and to be less addicted to betake itself to the sea than the larger species, its principal food being aquatic insects, small fishes, and seeds. During snow, however, it is occasionally met with in our estuaries and along the coasts, and in winter is not very rare in many parts of England, although I have not seen many that were obtained in Scotland. Montagu states that it inhabits the fens of Lincolnshire, where it breeds, making a floating nest, and laying four or five white eggs.

YOUNG.—In their first winter the young have very slight occipital tufts, but no elongated feathers behind the eyes. The upper part of the head is blackish-brown, darker behind, shaded laterally into greyish-brown, which extends a little below the eyes, covering part of the cheeks; the rest of which and the throat are greyish-white. The hind part of the neck is dusky brown, its fore part for about two inches brownish-grey; the rest of the lower parts silvery-white; but the sides of the neck and body clouded with blackish-grey. The upper parts of the body are brownish-black; the wings more brown, and with the same white markings as in the adult. The young in this state is easily distinguished from that of *Podiceps cornutus* by its recurved bill.

REMARKS.—If slight differences in the form and comparative length of the bill were sufficient to constitute genera, as they are assumed to be in very many cases, the four Grebes here described ought to belong to as many distinct genera, for no two of them agree precisely in the form of the bill, and yet all are most intimately allied in form, colours,

and habits. Perhaps it may be that in families of which the species are few, as in this, these species vary more in the form of the bill, so that each in reality may represent a genus in those families of which the species are very numerous. On account of a slight difference of this kind, although, perhaps, more obvious than in the other species, our common Dabchick has been promoted to generic distinction.

SYLBEOCYCLUS. DABCHICK.

THE Little Grebe of authors, *Podiceps minor*, and the American Dabchick, *Podiceps Carolinensis*, have been separated from the other species generally referred to the genus *Podiceps*, by the Prince of Canino, who has formed them into a distinct genus bearing the name of *Sylbeocyclus*. It differs from *Podiceps* chiefly in having the body short and full, and the bill not so long as the head; but, to preserve the uniformity of the generic characters, it is necessary to present them in full.

Bill rather short, moderately stout, much compressed, tapering, pointed; upper mandible mobile at the base, with the dorsal line straight and slightly declinate as far as the middle, convex toward the end, the ridge narrow, the nasal groove basal, half the length of the bill, and of considerable width; the sides convex toward the end, the edges sharp and a little inclinate, the tip direct, acute; lower mandible with the intercrural space long and very narrow, partly bare, the dorsal line ascending and straight, the crura with their lower outline straight, the sides nearly erect and slightly convex, the edges very sharp and direct, the tip acute.

Nostrils sub-medial, linear-oblong, in the fore and lower part of the membrane. Eyes rather small; eyelids feathered; a bare space from the eye to the bill. Aperture of ear extremely small.

Tibia long, but passing directly backward, and with its muscles enveloped by the skin to near the end, so that the legs come off from the posterior extremity of the body; tibia bare for a very short space; tarsus short, extremely compressed, its narrow anterior ridge with small scutella; the posterior with two series of small, prominent, pointed scales

directed downwards, and separated by a groove ; the sides with broad scutella. The hind toe small, elevated, broadly margined ; the anterior toes long, obliquely flattened, the outer longest, all with stiffish lateral expansions, marked above with oblique parallel lines, and connected at the base by webs. Claws small, depressed, oblong, the third expanded, and pectinato-serrate at the end.

Plumage very soft and blended, on the lower parts silky, on the neck and hind part of the back almost downy ; the scapulars very long and decurved ; the filaments of all the feathers free. Wings small, narrow, convex ; primaries eleven, small, the outer two longest ; secondaries short and rounded. Tail a slight tuft of minute downy feathers.

SYLBEOCYCLUS EUROPÆUS. THE EUROPEAN DABCHICK.

DIPPER. DIDAPPER. DOBCHICK. DABCHICK. LITTLE DOUCKER.

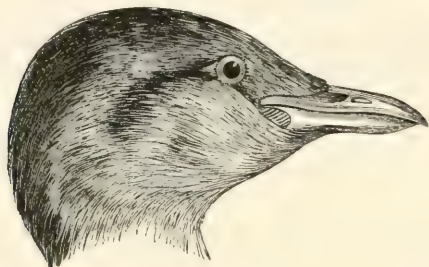


FIG. 76.

Colymbus minor. Gmel. Linn. Syst. Nat. I. 591.
Podiceps minor. Lath. Ind. Ornith. II. 784. Young.
Podiceps hebridicus. Lath. Ind. Ornith. II. 785. Adult.
 Black-chin Grebe. Mont. Ornith. Dict. and Suppl. Adult.
 Little Grebe. Mont. Ornith. Dict. and Suppl. Young.
 Grebe Castagneux. *Podiceps minor.* Temm. Man. d'Ornith. II. 727.
 Little Grebe. *Podiceps minor.* Selby, Illustr. II. 401.
Sylbeocyclus minor. Bonap. Comp. List, 64.

Male about ten inches in length, with the bill ten-twelfths long, stout, compressed, black, with the tips pale; head and neck tuftless; tarsus with the posterior scales very prominent; upper part of the head and throat black; sides and fore part of the neck chestnut; breast and sides of the body dusky; upper parts greenish-black; primary quills greyish-brown, most of the secondaries white, unless on the outer web toward the end. Female similar to the male, but smaller. Young with the lower mandible, and basal sides of the upper pale-brown, the upper part dusky; the head and hind neck brownish-grey, the cheeks and sides of the neck pale reddish,

mixed with brown; the fore part of the breast and the sides of the body light yellowish-brown, the rest of the lower parts and the throat white; the upper parts dusky, the fore part of the back and the scapulars greyish-yellow.

MALE.—This curious little bird being sufficiently described, as to form and plumage, in the generic character already given, it is only necessary here to mention some additional particulars, and give an account of its colours. The bill is very similar in form to that of the Cornerake, and of a dusky colour, the basal part of the lower mandible, the extreme tips of both, and the bare spaces between the eyes and the bill, brownish-white. The iris is brownish-red. The feet are olivaceous externally, flesh-coloured on the inner side. On the tarsus are sixteen anterior scutella; on the toes the scutella are not distinct from the lateral plates. The upper part of the head, occiput, hind-neck, and throat are greenish-black; the cheeks, sides, and fore part of the neck chestnut; the lower part of the neck in front, and the sides blackish-grey, the latter tinged with red; the rest of the lower parts blackish-grey, mixed with white. The upper parts greenish-black, the scapulars tinged with yellowish-brown; the quills brownish-grey; most of the secondary quills white, unless on part of the outer web toward the end.

Length to end of tail 10 inches; wing from flexure 4; bill along the ridge $1\frac{0}{2}$, along the edge of lower mandible 1; bare part of tibia $\frac{2}{12}$; tarsus $1\frac{4}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{1}{12}$; second toe $1\frac{3}{12}$, its claw $\frac{2}{12}$; third toe $1\frac{1}{2}$, its claw $\frac{3}{12}$; fourth toe $1\frac{8}{12}$, its claw $\frac{2}{12}$.

FEMALE.—The female is similar to the male, but somewhat less.

VARIATIONS.—Individuals vary considerably in colour, the lower parts, in particular, being more or less dusky.

HABITS.—Common as this little bird is, its habits have not often been well described by scientific writers.

One quiet evening in the beginning of March, as I was

resting on an eminence overlooking a small lake, margined with marshy ground, and thinking it strange that nothing was to be seen upon it excepting a pair of tame Swans, I observed a small bird rise from near the edge, and fly in a fluttering manner to a short distance, when it alighted on the water, and instantly dived. In a very short time it rose, at the distance of about twenty paces, floated a few moments, turning briskly about, dived, emerged, and thus continued to exercise itself. At this place the bottom of the lake was covered with weeds of a greyish-green colour, among which some straggling reeds shot up. I saw that on diving it shot along at the depth of a foot or two, flying with surprising speed. Another individual now appeared, and both continued for a long time to dive at intervals, passing in various directions, and apparently pursuing insects or small fishes. Having lost sight of them, I directed my eyes along the tufty margin of the lake, and unexpectedly came upon a larger bird, which showed much less activity, and which, from its peculiar movements, I at once knew to be a Water-Hen. It advanced slowly, jerking its upraised tail, and moving its head and neck at each step, now waded among the sedges and reeds, looking here and there, then floated on the water, seeming at equal ease there, and thus went on quietly searching for food, and picking up something now and then. The little Grebes, on the contrary, kept entirely to the water, showed the greatest activity, bobbed up like corks, sat lightly too, but, from their peculiar form, rose less above the surface, and kept their tails, or all they had for them, on the level of the water. In swimming they did not advance by jerks, but stiffly, with raised necks; in diving they slipped beneath so gently that the ripple which they caused was little apparent; and in emerging they seemed to glide up without the slightest effort. Now, all this is very trite, and yet who among our ornithologists has said so much of the Dabchick, common as the little thing is in many parts of the country?

It is a curious and interesting little creature. When surprised it eludes its enemy by slipping beneath the surface, and not appearing until a good way off. It is seldom seen to fly, and when it does get on wing it proceeds in a direct

course, with a fluttering motion of its wings, and its large paddles projecting beyond its blunt end. Its activity is amusing, and contrasts with the slowness of the graceful Swan. When frightened it sinks, so as to leave nothing exposed but the head, or shoots away under water, and after a while thrusts up its bill to breathe. Its food consists of small fishes, aquatic coleoptera, mollusca, and sometimes seeds. It is seldom heard to emit any cries, but in spring makes a low clicking and chattering sort of noise.

The nest, which I have never seen, is variously described by authors. Some say it floats, others view it as floating only through accident; some even allege, that when drifting along, the sitting bird thrusts its feet through it, and paddles away to a safe place. The truth appears to be, simply, that the nest is very large, formed of a mass of aquatic plants, and placed among the reeds or sedges. On leaving it, the bird is said to cover the eggs with dry grass, probably with the view of concealing them. They are five or six in number, dull white, and of an elliptical form. The young presently betake themselves to the water.

This bird can hardly walk, and even in standing rests on the hind part of its tarsi. Although it can easily rise from the water on wing, it is unable to spring from the ground, and may thus be caught with the hand. Mr. Selby has even found that when, having in winter betaken themselves to the sea-coast, "they happened to be left in small pools after the recess of the tide, they first dived, and afterwards invariably attempted to conceal themselves among the fronds of the algæ, rarely attempting to escape by flight." I have never observed them in full open flight, although in this respect they probably resemble the other species. When the waters are frozen they betake themselves to estuaries, and even the open shores of the sea, where they are said to feed on small fishes and shrimps.

In summer, this species is not uncommon even in the most northern parts of Scotland, as well as in the Outer Hebrides, where, however, I think, it is not found in winter. Although generally dispersed, it is not plentiful in the middle and southern parts of Scotland, nor in the northern districts

of England, in the southern portions of which, however, it is said to be very common. On the Continent, also, it is generally distributed, but in America is not met with, the species which had been mistaken for it there being probably *Podiceps Carolinensis*, which, however, is much larger, although usually bearing the same name of Dobchick.

YOUNG.—When fledged, the young have the bill flesh-coloured below, and on the basal sides of the upper mandible, the rest dusky-brown; the iris brown; the feet brownish-black externally, olivaceous internally. The upper parts of the head and hind neck are greyish-brown; the throat white; the sides of the head and neck, with part of the latter anteriorly light dull reddish, mixed with brown; the lower part of the neck, and the sides of the body pale yellowish-brown; the breast silvery-white. The upper parts are dusky-brown, the scapulars and fore part of the back tinged with yellowish-brown, as are the sides of the rump; the wings as in the adult, but lighter.

COLYMBINÆ.

LOONS AND ALLIED SPECIES.

IF the birds commonly known by the name of Divers, or Loons, form a well-defined and easily distinguishable genus, they are also all that we have to make a family of; for they certainly differ, in that extended point of view, from both the Grebes and the Auks, sufficiently to render them members of a separate group of that station, although the smallness of their number might induce a belief of their being with more advantage referable to either of the conterminous series. As the genus is fully characterized in the following pages, I shall here present only a few distinctive marks.

The body is elongated, narrow, tapering at both ends; the neck long, but stout; the head oblong, compressed, narrowed anteriorly. The bill is about the length of the head, much compressed, tapering, and pointed; the mouth of moderate width, but expansile; the tongue long, trigonal, and

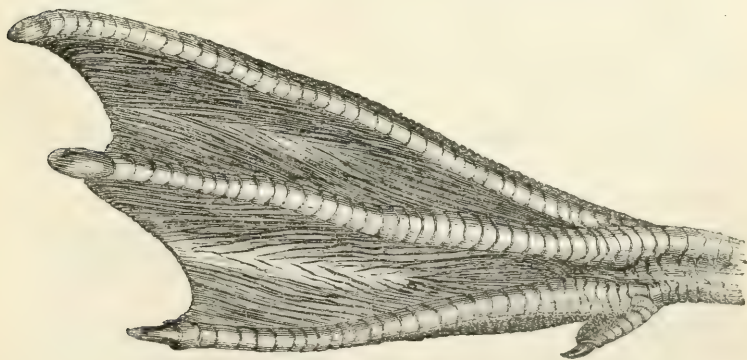


FIG. 77.

pointed ; the œsophagus wide ; the stomach moderately muscular ; the cœca rather large. It is, however, in their feet that they differ essentially from the Grebes, the toes being connected by regular webs. The tail also, though small, is formed of feathers of the ordinary kind, not of downy plumes. The wings, very small, narrow, and acute, do not differ materially from those of the Auk family.

In the celerity with which they dive and proceed under water, they are not exceeded by the Mergansers, Cormorants, or perhaps any other birds.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. COLYMBUS. LOON.

Bill about the length of the head, rather slender, much compressed, tapering, pointed ; feet short, and placed at the extremity of the body ; tarsus extremely compressed, edged before and behind, covered all over with sub-hexagonal scales ; hind toe extremely small, connected with the next by a membrane, which is partly free and lobiform ; anterior toes long ; interdigital membranes narrow ; claws small, convex above, rounded ; wings short, narrow, pointed ; tail extremely short, rounded, of about twenty feathers.

1. *Colymbus glacialis*. *Northern or Ring-necked Loon*. About three feet long ; head and neck deep bluish-green, glossed with purple ; a patch on the throat and a broad ring, incomplete in front, on the neck, white, longitudinally streaked with black.

2. *Colymbus arcticus*. *Black-throated Loon*. About two feet eight inches long ; upper part of head and hind-neck light grey ; fore-neck purplish-black.

3. *Colymbus septentrionalis*. *Red-throated Loon*. About two feet five inches long ; sides of the head bluish-grey ; upper part of the head grey, with small dark spots ; nape, hind and lower parts of neck, streaked with black and white ; fore-neck with a broad longitudinal band of deep orange-red.

COLYMBUS GLACIALIS. THE RING-NECKED LOON.

GREAT NORTHERN DIVER. GREATEST SPECKLED DIVER. IMMER, EMMER, OR EMBER GOOSE. GUNNER. NAAK. MUR-BHUACHAILL, OR SEA-HERDS-MAN. COBBLE.

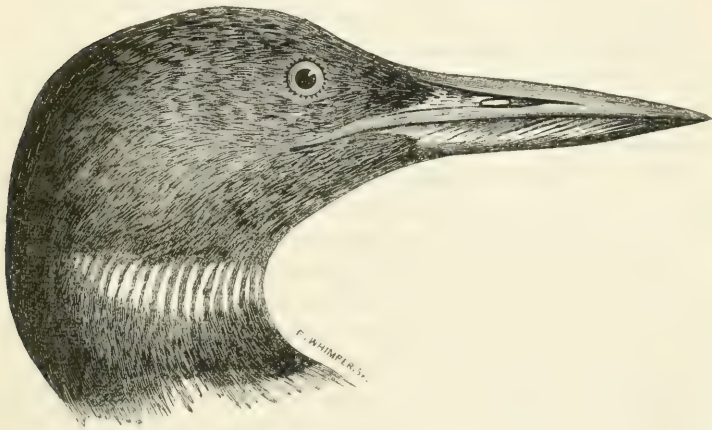


FIG. 78.

- Colymbus glacialis. Linn. Syst. Nat. I. 221. Adult.
 Colymbus Immer. Linn. Syst. Nat. I. 222. Young.
 Colymbus glacialis. Lath. Ind. Ornith. II. 799. Adult.
 Colymbus Immer. Lath. Ind. Ornith. II. 800.
 Northern Diver. Mont. Ornith. Dict. and Suppl.
 Plongeon Imbrim. Colymbus glacialis. Temm. Man. d'Ornith. II. 910.
 Northern Diver. Colymbus glacialis. Selby, Illustr. II. 406.
 Colymbus glacialis. Jenyns. Brit. Vert. Anim. 255.
 Colymbus glacialis. Bonap. Comp. List. 65.

Adult about three feet long ; with the bill black, almost straight, three inches in length along the ridge, an inch in height at the base, with the sides flattened, the base of the

lower mandible with a ridge and several striæ, the edges little inflected, and the commissure grooved beneath; the head and neck deep bluish-green glossed with purple; a patch on the throat, and a broad ring, incomplete in front, on the neck, of white longitudinally streaked with black; the upper parts black, the middle of the back and the scapulars with quadrangular, its fore and hind parts, and the wings with small round white spots, of which there are two on each feather; the sides of the lower neck streaked with white and black; the lower parts white, but the sides black, spotted with white, and a narrow dusky band across the hind part of the abdomen.

MALE IN SUMMER.—This beautiful bird, the largest of its genus, has the body of great bulk, elliptical, and much depressed; the neck long and thick; the head of moderate size, oblong, anteriorly narrowed. The bill, as long as the head, is almost straight, stout, much compressed, tapering, and pointed; the upper mandible with the dorsal line gently descending, slightly convex beyond the middle, the ridge convex, the sides nearly erect, little convex, the edges sharp, little inflected, the tip narrow and rather bluntly pointed; the lower mandible with the intercrural space very long and narrow, with a groove continued beyond the junction of the crura, which have their lower outline nearly straight, their sides nearly erect, with numerous fine striæ at the base, and a prominent ridge near the edge, the dorsal line ascending and straight, the edges sharp and little inclinate, the tip acuminate; the gape-line slightly arcuate.

The mouth is of moderate width, but extensile, the gape-line commencing under the eyes; the palate flattened, with six series of reversed papillæ; the tongue two inches in length, fleshy, trigonal, tapering, longitudinally grooved above, with the point slender and horny. The œsophagus, seventeen inches long, is two inches and a-half in width along the neck, but contracts considerably in entering the thorax, and again enlarges; its walls thin, with the outer layer of circular and the subjacent layer of longitudinal fibres very distinct, the inner or mucous coat plicate. The proventricular portion three inches long, its transverse fibres very strong; the glan-

dules very numerous, large, oblong or roundish, and arranged in a continuous belt. The stomach is moderate, elliptical, three inches in length, two inches and eight-twelfths in breadth; muscular, with large tendons, and moderately thick lateral muscles, composed of strong fasciculi; the epithelium dense, thick, with large longitudinal transversely fissured ridges, and roundish, concave, irregularly fissured grinding surfaces. The pyloric orifice is wide, but has a strong prominent margin. The intestine, six feet ten inches in length, varies in width from nine-twelfths to half an inch. The cœca are an inch and ten-twelfths in length, nine-twelfths in breadth, and rounded at the end. The rectum is three and a half inches long, with a globular dilatation, three inches in diameter.

The nostrils are small, linear, direct, sub-basal, pervious, four-twelfths long. The eyes rather small, their aperture four-twelfths. That of the ear only two-twelfths. The feet are short, and placed at the extremity of the body; the tibia long, but covered with the skin so as not to be free, and feathered almost to the joint; the tarsus short, extremely compressed, edged before and behind, covered all over with sub-hexagonal scales. The hind toe extremely small, elevated, connected with the second by a membrane, which is partly free and lobiform; the anterior toes long, the outer longest; the inner with a two-lobed membrane; the interdigital membranes narrow; the middle toe with fifty-six scutella. The claws are small, depressed, convex above, rounded at the end.

The plumage is short, dense, and firm; on the head and neck very short and blended; the feathers oblong; those on the upper parts compact, glossy, oblong, and abruptly terminated; on the lower oblong, rounded, and rather blended. The wings are short, narrow, convex; the primaries strong, tapering, the first longest, the second two-twelfths of an inch shorter, the rest rapidly decreasing; the secondaries rather broad, and rounded. The tail extremely short, rounded, of twenty moderately firm feathers.

The bill is black, with the tips horn-coloured; the iris bright-red; the tarsi and toes purplish-blue externally, tinged with pale yellowish-red internally; the claws bluish-grey;

the interdigital membranes brownish-black, paler in the middle. The head and neck are deep bluish-green, glossed with purple. On the throat is a small transverse patch of white and black streaks, and farther down the neck on each side is a large transverse patch of the same, the two patches meeting behind, but separated before by a space an inch in breadth. The lower parts are glossy white, with the exception of the sides of the lower part of the fore-neck, which are striated with black, the sides of the body, which are greenish-black, sprinkled with small round, white dots, the axillar feathers, and large wing-coverts, which have a medial dusky band, a narrow transverse band of dusky feathers, each having two whitish spots across the hind part of the abdomen, and the lower tail-coverts, which are also blackish-brown, and tipped or spotted with white. The upper parts are glossy black, beautifully variegated with white spots, arranged in transverse bands, small and roundish toward the neck and on the wings, larger and somewhat rectangular on the middle of the back, on the scapulars largest and square, on the hind part of the back very small and round. There are two of these spots on each of the feathers toward the end, and the striated parts of the neck have the feathers black, with two lateral white spaces, on which the filaments are bent upwards, so that these feathers are longitudinally concave. The alular feathers, primary coverts, primary and secondary quills, are brownish-black, glossed with green, some of the inner secondaries with two subterminal white spots. The tail is brownish-black.

Length to end of tail 36 inches; extent of wings 55; wing from flexure $15\frac{3}{4}$; tail 3; bill along the ridge $3\frac{3}{12}$; along the edge of lower mandible $4\frac{1}{2}$; its height at the base 1; tarsus $3\frac{4}{12}$; first toe $\frac{9}{12}$, its claw $\frac{2}{12}$; second toe $3\frac{9}{12}$, its claw $\frac{6}{12}$; third toe $4\frac{2}{12}$, its claw $\frac{6}{12}$; fourth toe $4\frac{5}{12}$, its claw $\frac{5}{12}$.

FEMALE IN SUMMER.—The female resembles the male, but is considerably smaller. The œsophagus, fifteen inches long, two inches wide, contracted within the thorax to an inch and three-fourths; the belt of proventricular glandules two inches and two-twelfths. The stomach is two inches

and eight-twelfths in length, and of the same breadth ; with the lateral muscles very thick, the upper and lower distinct ; the epithelium dense, rugous, and of a yellowish tint. The intestine is five feet five and a half inches in length, about half an inch in width ; the cæca an inch and a quarter long, and of considerable width ; the rectum five inches and a half long, with the cloacal dilatation two inches in diameter.

Length to end of tail 32 inches ; extent of wings 52 ; wing from flexure $14\frac{1}{2}$; tail $2\frac{3}{4}$; bill along the ridge 3 ; along the edge of lower mandible $4\frac{1}{4}$; its height at the base $\frac{11}{2}$; tarsus $3\frac{3}{2}$; first toe $\frac{9}{2}$, its claw $\frac{2}{2}$; second toe $3\frac{8}{2}$, its claw $\frac{6}{2}$; third toe $4\frac{1}{2}$, its claw $\frac{6}{2}$; fourth toe $4\frac{4}{2}$, its claw $\frac{4}{2}$.

HABITS.—The Great Northern Diver is among the most beautiful of those birds which seek their food in the waters of the great deep. It is not with us a very numerous species, and can scarcely be called gregarious, although adults sometimes, and the young more frequently, form small parties of from two to five. A wanderer on the ocean, it not only frequents the margins of the sea, fishing in the bays and estuaries, but may often be met with many miles from land, although seldom at such distances as the Gulls and other hovering birds. Narrow channels, firths, voes, sea-lochs, and sandy bays, are its favourite places of resort. There it floats, lightly it may be, but apparently deep in the water, its body being so much depressed that little of it seems exposed, compared with what we see of the Black-backed Gull, the one like a deeply-laden ship, scudding steadily along, the other in ballast, with scarce a hold on the water, as it mounts the heavily-rolling waves, and again descends into the trough. But though the Gull floats thus lightly, the Diver soon overtakes and shoots far a-head of it. In turning, the Gull has the advantage, for it moves round with ease as on a pivot, while the Diver slowly but steadily and majestically. This, one may say, depends on their comparative length of keel, or rather of hull.

But, to observe the manner of life of this celebrated fisher, the best plan is for one to conceal himself among the

rocks of some little bay or creek frequented by it, and there watch its movements. It is now the end of spring, when the returning warmth gives an increase of animation to the wandering tribes of the winged inhabitants of the ocean air. But the Loon makes comparatively little use of his wings, and his great bulk and robust frame would be ill adapted for the hovering flight of the Gulls and Petrels. There he comes, followed by his mate, advancing with marvellous speed. They have rounded the point, and now stop for a moment to cast a searching glance along the shore, lest an enemy should be lurking there. Forward they start, the smooth water rippling gently against their sides. Small effort they seem to make, and yet powerful must be the stroke of the oars that impel masses so large at so rapid a rate. Now and again they dip their bills into the water, then the head and neck, one glides gently into the water, without plunge or flutter, and in a few seconds appears with a fish in his bill, which with upstretched head and neck he swallows. The other, having also dived, appears with a fish larger and less easily managed. She beats it about in her bill, plashing the water, and seems unable to adapt it to the capacity of her gullet; but, at length, after much striving, masters it, and continues her search. Backward and forward over the clear sand of the shallow bay they glide in their quiet way, and now they have both dived with their heads toward us. One rises close to the sea-weeds, and so near to us that we might almost count the spots on his back. The other, in emerging, has perceived us, and somehow communicates the discovery to her mate. They swim about for a short while with erected necks, then sink into the water, their heads disappearing last, and when we see them again, they are three hundred yards distant, standing out to sea, with half-emerged bodies.

I have several times seen this bird shot by lying in wait for it in a place thus frequented, but have myself only on a single occasion killed one from the shores. The best time to shoot is when it floats with its head under the water, or when it raises itself up and shakes its wings. In the former case, it seems to see nothing above the surface, whether owing to the great refraction of the light, or to its being intent on

what is passing below. It is very seldom that in a boat one has a chance of procuring it, for it is generally shy, and always extremely vigilant. If shot at, and not wounded, it never flies off, but dips into the water, and rises at a great distance; and unless shot dead, there is little chance of procuring it, its tenacity of life being great, and its speed exceeding that of a four-oared boat.

Sometimes when surprised, or apprehensive of danger, I have heard it emit a low croaking sound. On ordinary occasions it is quite silent, but often, even at night, its loud, clear, melancholy cry, may be heard from the sea, and in calm weather at the distance of half a mile or more. It is very seldom seen on wing, but in the estuaries and channels, at the turn of the tide, or early in the morning, and again in the evening, it may be seen flying at a great height, with a direct rapid flight, performed by quick beats of its expanded wings, which even then seem too small for its body, and contrast strangely with those of the Gulls. But in a direct course this bird rapidly overtakes and passes a Gull flying at its utmost speed. I have never seen it on shore, but have been informed that there it is unable to walk, or even to stand, and is obliged to push itself forward on its belly. An acquaintance of mine caught one that had by the ebbing of the tide inadvertently allowed itself to be left in a very shallow pool. Montagu states that "in the spring of 1797, one was taken near Penzance in Cornwall, at some distance from the water. It appeared incapable of raising itself from the ground, though it did not seem to have any defect, as it lived for six weeks in a pond," and died for want of a sufficient quantity of food. Another, taken alive, and kept for some months in a pond, was also incapable of walking.

From the middle of spring to the end of May it is very common along the shores of the Outer Hebrides, where I have seen several hundreds, all of which were in mature speckled plumage. They disappear in the beginning of June, or sometimes earlier, and do not reappear in autumn, at least in the same plumage; for those which I have seen there in winter had no spots on the back. At that season it is met with from the most northern parts to the south of

England, but is of rare occurrence beyond the middle parts of the latter country. The young birds proceed farther south than the old, of which very few at any season are met with on the southern coasts of England. It is more numerous on the western than on the eastern coasts of Scotland, where it is chiefly seen in the firths. Mr. Dunn says it "is plentiful both in Orkney and Shetland in the winter and spring. It leaves about the latter end of May, by which time it has acquired its perfect summer plumage."

It appears that all, or nearly all, the individuals of this species that frequent our coasts in autumn, winter, and spring, retire farther northward in summer to breed. At that season it has been found in the northern parts of the continent of Europe, in Iceland, Greenland, and the northern regions of America, from the shores of the icy sea to Maryland. Mr. Audubon, who gives by far the best account of the habits of this bird that I have seen, is the only person who has minutely described its nest, and the circumstances relative to it. In presenting the following extract from his Ornithological Biography, I have to premise that it breeds on the borders of rivers, lakes, and marshes, never on the sea-shore:—"The situation and form of the nest differ according to circumstances. Some of those which breed in the State of Maine place it on the hillocks of weeds and mud, prepared by the musk-rat, on the edges of the lakes, or at some distance from them among the rushes. Other nests, found on the head-waters of the Wabash River, were situated on the mud, amid the rank weeds, more than ten yards from the water. One that I saw after the young had left it, on Cayuga Lake, in 1824, was almost afloat, and rudely attached to the rushes, more than forty yards from the land, though its base was laid on the bottom, the water being eight or nine inches deep. Others examined in Labrador were placed on dry land, several yards from the water, and raised to the height of nearly a foot above the decayed moss on which they were laid. But, in cases where the nest was found at any distance from the water, we discovered a well-beaten path leading to it, and very much resembling those made by the Beaver, to which the hunters

give the name of crawls. The nest, however placed, is bulky, and formed of the vegetable substances found in the immediate vicinity, such as fresh or withered grasses, and herbaceous plants. The internal part, or the true nest, which is rarely less than a foot, and is sometimes fifteen inches, in diameter, is raised upon the external or inferior mass, to the height of seven or eight inches. Of the many nests which I have examined, I have found more containing three than two eggs, and I am confident that the former number is that which more frequently occurs. The eggs average three inches and three quarters in length, by two inches and a quarter in their greatest breadth, and thus are considerably elongated, being particularly narrowed from the bulge to the smaller end, which is rather pointed. They are of a dull greenish-ochry tint, rather indistinctly marked with spots of dark umber, which are more numerous toward the larger extremity. On approaching the female while sitting on her eggs, I assured myself that she incubates with her body laid flat upon them, in the same way as the domestic Duck; and that, on perceiving the intruder, she squats close, and so remains until he is almost over her, when she springs up with great force, and makes at once for the water, in a scrambling and sliding manner, pushing herself along the ground. On gaining the water she dives at once, emerges at a great distance, and very rarely suffers herself to be approached within gun-shot. The young are covered at birth with a kind of black stiff down, and in a day or two after are led to the water by their mother. They swim and dive extremely well even at this early stage of their existence, and, after being fed by regurgitation for about a fortnight, receive portions of fish, aquatic insects, and small reptiles, until they are able to maintain themselves."

The food of this species, while it remains with us, consists of small fishes, herrings, young coalfish, sometimes even young flounders, and crabs. In its stomach are generally found small pebbles and gravel. Its flesh is dark-coloured and rank; but of its quality as food I am unable to speak from experience, although authors condemn it.

YOUNG.—As the bird does not breed with us, I cannot describe the young when fledged. In October and November, however, they are as follows:—The bill has the ridge of the upper mandible dusky, its edges and basal part, with the whole of the lower mandible, greenish-yellow. The iris brown. The feet dusky externally, yellowish-flesh-coloured internally; the webs flesh-coloured; the claws brownish-yellow, dusky at the end. The upper part of the head and the nape dark greenish-brown; the hind part and sides of the neck greyish-brown, the latter mottled with greyish-white. The feathers of the head and neck are soft and almost downy; those of the back rounded at the end, and not truncate, as in the adult. The feathers of all the upper parts are brownish-black toward the end, broadly margined with ash-grey; the margins larger and paler on the feathers of the middle of the back, and especially the scapulars; on those of the hind part of the back narrow. The quills and tail-feathers are blackish-brown, with a greenish gloss. The fore part of the neck is greyish-white, minutely and faintly mottled with grey; the cheeks also variegated; the lower sides of the neck streaked with grey; all the lower parts pure white, excepting under the wings, where the feathers are like those of the back, the axillars, which are streaked with grey, and a band of brownish-grey across the hind part of the abdomen, together with the feathers under the tail, which are grey tipped with whitish. This, I think, must be the first plumage, as some individuals seen in it were very small. Some of the dimensions of two are as follows:—

MALE.—Length to end of tail 31 inches; extent of wings 49; wing from flexure $13\frac{1}{2}$; tail $2\frac{1}{2}$; bill along the ridge $2\frac{5}{12}$, along the edge of lower mandible $4\frac{2}{12}$; tarsus $3\frac{1}{12}$; outer toe $4\frac{4}{12}$, its claw $\frac{3}{12}$.

FEMALE.—Length to end of tail 29 inches; extent of wings 46; wing from flexure $13\frac{1}{4}$; tail $2\frac{3}{4}$; bill along the ridge $2\frac{9}{12}$, along the edge of lower mandible $4\frac{1}{12}$; tarsus $3\frac{2}{12}$; outer toe $4\frac{4}{12}$, its claw $\frac{3}{12}$.

PROGRESS TOWARD MATURITY.—In this state they continue until the next autumnal moult, according to some; but Mr. Audubon says that “toward spring the eye assumes a redder tint, and the plumage of the upper parts gradually becomes spotted with white; and when the moult is completed about the end of summer, the plumage is as in the adult, although the tints are improved at each successive moult for several years.” M. Temminck gives a very different statement:—“At the age of a year, the individuals of both sexes assume toward the middle of the neck a transverse band of a blackish-brown, about an inch in length, and forming a kind of collar; the feathers of the back have a blackish tint, and the small white spots begin to appear. At the age of two years the collar is more marked; that part, the head, and the neck are variegated with brown and greenish-black feathers; the numerous spots of the back and wings prevail; and the band under the throat, as well as the collar of the nape, are marked by longitudinal brown and white lines. At the age of three years the plumage is perfect.” Nothing further is to be found on the subject in the writings of any subsequent author. It is by no means in a satisfactory state.

COLYMBUS ARCTICUS. THE BLACK-THROATED LOON.

BLACK-THROATED DIVER.

Colymbus arcticus. Linn. Syst. Nat. I. 221.

Colymbus arcticus. Lath. Ind. Ornith. II. 800.

Black-throated Diver. Mont. Ornith. Dict.

Plongeon Lumme. *Colymbus arcticus.* Temm. Man. d'Ornith. II. 913.

Black-throated Diver. *Colymbus arcticus.* Selby, Illustr. II. 411.

Colymbus arcticus. Jenyns. Brit. Vert. Anim. 256.

Colymbus arcticus. Bonap. Comp. List. 65.

Adult about two feet eight inches long ; with the bill black, straight, two inches and a half along the ridge, two-thirds of an inch in height at the base, with the sides prominent, the edges in part involute, but direct at the base and toward the end ; the upper part of the head and the hind neck light-grey, the fore part and sides of the head darker ; the fore neck purplish-black, ending angularly below, and having a transverse interrupted white band above ; sides and lower part of the neck in front dusky, streaked with white ; the upper parts black, glossed with green anteriorly, and shaded with brown behind ; two dorsal bands of white square spots in transverse rows ; scapulars with larger white spots ; the lower parts of the body white, with a longitudinal dusky band on the sides.

MALE IN SUMMER.—This species has the same general form as the last, its body being elongated, rather slender, and much depressed ; the neck long and rather thick ; the head of moderate size, oblong, and anteriorly narrowed. The bill is about as long as the head, straight, stout, compressed, tapering, and pointed ; the upper mandible with the dorsal line almost straight and direct, the ridge convex, the sides convex beyond the nostrils, the edges involute for half their length

in the middle, direct at the base and toward the end, the tip narrow and pointed ; the lower mandible with the intercrural space very long and extremely narrow, the lower outline of the crura straight, the dorsal line ascending and very slightly convex, the edges sharp and involute, the tip attenuated.

The mouth is of moderate width, but extensile, the gape-line commencing under the eyes. Nostrils small, sub-basal, linear, direct ; eyes of moderate size ; apertures of ears very small. The feet are short, and placed at the extremity of the body ; the tibia covered by the skin of the body almost to the end, the tarsus short, extremely compressed, edged before and behind, covered all over with angular scales. The hind toe extremely small, elevated, connected with the second by a membrane, which is partly free, forming a lobe narrowing to the end ; the anterior toes long, the outer longest ; the inner with a two-lobed membrane ; the interdigital membranes narrow, and emarginate ; all the toes with numerous scutella. The claws are small, depressed, convex above, obtuse.

The plumage is short, dense, and firm ; on the head and neck very short, soft, and blended ; the feathers of the upper parts oblong, glossy, those of the fore part of the back, and the scapulars, truncate ; of the lower parts short, blended, but stiffish, and considerably glossed ; those on the lower parts of the sides of the neck much incurved, with the terminal filaments stiff. The wings are of moderate length, narrow, and convex ; the primaries strong, tapering, the first longest, the second scarcely shorter, the rest rapidly decreasing ; the secondaries very short, broadly rounded. The tail is extremely short, rounded, of eighteen rather firm, rounded feathers.

The bill is black ; the feet greyish-blue externally, pale flesh-coloured internally ; the webs flesh-coloured ; the claws dusky, yellowish at the base. The upper part of the head and the hind neck are of a hoary bluish-grey, the fore part and sides of the head darker ; the throat and fore part of the neck are purplish-black, that colour extending about six inches, and ending in an angle. On the upper part of this dark band is a transverse narrow interrupted band of linear white streaks. The sides of the neck are blackish-brown,

with several longitudinal white streaks, the margins of the feathers being of that colour. On the lower part of the neck anteriorly is a broad space similarly marked. The upper parts of the body are glossy black, tinged with green. On the fore part of the back are two longitudinal bands of transverse white bars, formed by the tips of the feathers. The scapulars, excepting the outer, are also marked with transverse rows of rather large square spots. Wing-coverts black, most of them with two roundish white spots near the end. The quills are blackish-brown, tinged with grey on the outer, and paler on the inner webs. The lower parts of the body are pure white, excepting a longitudinal band on the sides under the wing, which is dusky.

Length to end of tail 28 inches, to end of wings 26 ; wing from flexure $12\frac{1}{2}$; tail $2\frac{3}{4}$; bill along the ridge $2\frac{6}{12}$, along the edge of lower mandible $3\frac{6}{12}$; its height at the base $\frac{9}{12}$; tarsus $3\frac{2}{12}$; hind toe $\frac{8}{12}$, its claw $\frac{2}{12}$; second toe $3\frac{2}{12}$, its claw $\frac{5}{12}$; third toe $3\frac{6}{12}$, its claw $\frac{6}{12}$; fourth toe $4\frac{2}{12}$, its claw $\frac{5}{12}$.

FEMALE.—The female is similar to the male, but smaller. Length to end of tail 25 inches.

HABITS.—The Black-throated Diver begins to appear along our northern coasts about the end of September, frequenting the bays and estuaries, but in small numbers. In winter it is to be seen here and there along all the coasts of Britain, the number of young birds greatly exceeding that of adult, but not nearly so great as that of the young Red-throated Loons. Most of them depart by the end of April, a few only remaining to breed in the more northern parts of Scotland, and some of its islands. It sits deep in the water, when alarmed often proceeds with little more than its neck and head apparent, swims with surprising speed, flies generally high, with rapidity, in a direct course, with outstretched neck, and quick beats of the wings. Its food consists of fishes, crustacea, and sometimes testaceous mollusca. In winter it is seldom seen on rivers or lakes ; but in summer it betakes itself to inland waters, and there constructs its nest, which, however, I have not met with. Mr. Selby gives the

first account of its breeding in Scotland. In his report on the quadrupeds and birds observed on an excursion made in the summer of 1834, he says:—"This beautiful species, whose breeding station had never before been detected, we found upon most of the interior Sutherland lochs. The first we noticed was at the foot of Loch Shin, where we were so fortunate as to find the nest, or rather the two eggs, upon the bare ground of a small islet, removed about ten or twelve feet from the water's edge. The female was seen in the act of incubation, sitting horizontally, and not in an upright position, upon the eggs. In plumage she precisely resembled the male, and when fired at immediately swam, or rather dived off to a short distance. Our pursuit after them was, however, ineffectual, though persevered in for a long time, as it was impossible to calculate where they were likely to rise after diving. Submersion frequently continued for nearly two minutes at a time, and they generally reappeared at nearly a quarter of a mile's distance from the spot where they had gone down. In no instance have I ever seen them attempt to escape by taking wing. I may observe, that a visible track from the water to the eggs was made by the female, whose progress upon land is effected by shuffling along upon her belly, propelled by her legs behind. On the day following (Saturday, the 31st of May), Mr. J. Wilson was fortunate enough to find two newly-hatched young ones in a small creek of Loch Craggie, about two and a half miles from Lairg. After handling and examining them, during which the old birds approached very near to him, he left them in the same spot, knowing that we were anxious to obtain the old birds. Accordingly, on the Monday morning we had the boat conveyed to the loch, and, on our arrival, soon descried the two old birds, attended by their young, and apparently moving to a different part of the loch. Contrary to their usual habit at other times, they did not attempt to dive upon our approach, but kept swimming around their young, which, from their tender age, were unable to make much way in the water, and we got sufficiently near to shoot both of them through the neck and head, the only parts accessible to shot, as they swim with the whole body nearly submerged. The female could

only be distinguished from the male by a slight inferiority of size, and both were in the finest adult or summer plumage. We afterwards saw several pairs, upon various lochs, and upon Loch Kay a pair attended by two young ones, nearly half-grown. When swimming, they are in the constant habit of dipping their bill in the water, with a graceful motion of the head and neck."

It is said to be of extremely rare occurrence in Shetland. Mr. Dunn says he never saw it there, although there is no doubt of its visiting occasionally. It is, he says, extremely rare in Orkney; but Messrs. Baikie and Heddle give a different statement:—"This bird, in its perfect, and in its immature state, though not uncommon, is by no means so abundant as the Great Northern Diver. By some it is stated to be exceedingly rare, but within the last few years it has been shot at South Ronaldshay, at Scapa, at Kirkwall, at Sanday, &c. It is very shy. A few remain with us the whole year." In the Hebrides it has escaped my notice; but Mr. John MacGillivray, who visited some of them in 1840, says:—" *Colymbus arcticus*, Black-throated Diver, was ascertained to breed in North Uist. I did not, however, find its nest, but mention the fact upon the authority of several of my friends who did so, and know the species well—among others, Lieutenant Macdonald, of North Uist." Mr. Thomas Jamieson, in his Notes on the Birds of Skye, writes:—"I saw an individual of this species, in the adult plumage, on the morning of the 24th September, when down by the sea-shore. I am not aware of their occurrence in Skye during summer, but have reason to think that they breed on the opposite shore of the Long Island. Divers, I was informed by those who have shot them, occur in greatest numbers along the coast of Skye in the beginning of spring."

In the Cromarty Firth it is not very uncommon in winter; in the estuaries of the South Esk and Tay it is also met with, and a few are to be seen in the Firth of Forth; but farther southward it becomes very rare, although individuals have been shot on many parts of the coasts of England.

It is said to breed in Norway, Sweden, Lapland, and the extreme north of Europe generally, and in winter to extend

to the south of Europe. In North America it extends as far south as the Gulf of Mexico. "One of the most remarkable circumstances relative to this beautiful bird," says Mr. Audubon, "is the extraordinary extent to which the wanderings of the young are carried in autumn and winter. It breeds in the remote regions of the north, from which many of the old birds, it would seem, do not remove far, while the young, as soon as they are able to travel, take to wing and disperse, spreading not only over the greater part of the United States, but beyond their south-western limits."

The eggs, of which there are only two, sometimes three, are of a very elongated oval form, three inches in length, two inches in their greatest breadth, brownish-olive, sprinkled all over with black and dark brown, with larger spots of the same at the broader end. The young are said by Mr. Audubon to be of a uniform brownish-black colour, when in their first downy plumage; by Sir W. Jardine to be greyish-black, paler beneath.

YOUNG.—In October, the young have the bill light greyish-blue, dusky along the ridge, whitish at the base of the lower mandible; the iris brown; the feet dusky-grey, paler on the inner side. The upper part of the head and the hind neck are dark greyish-brown; the cheeks greyish-white, minutely streaked with dusky; the fore part of the neck also greyish-white, faintly dotted, its sides below streaked with brown. The upper parts of the body are brownish-black, the feathers all broadly margined with light grey; the hind part of the back dull brownish-grey. The quills are brownish-black, the secondaries of a lighter tint, and margined with grey; the tail-feathers dusky, similarly margined. The lower parts of the body are pure white, the feathers on the sides, and some of the lower tail-coverts dusky, edged with bluish-grey.

PROGRESS TOWARD MATURITY.—According to M. Temminck, "the young, when a year old, have the head and hind neck pale grey; the throat and fore part of the neck white; but on the throat, and sometimes on the fore part of the

neck, there appear some violet-black feathers mixed with white feathers ; the longitudinal streaked band of the sides of the neck begins to form ; the streaks of the lower part of the neck equally appear, and some black feathers, without spots, appear on the back, rump, and sides.

“ At the age of two years, the grey of the head and nape become deeper, and assume a blackish tint, but only on the forehead ; the violet-black of the throat and fore part of the neck appear, but are variegated with some white feathers ; the longitudinal bands are formed ; the feathers of the sides and of the upper part of the back, the scapulars, and wing-coverts assume the white bands and spots ; the upper mandible becomes blackish, but its base, as well as a portion of the lower mandible, are still of a grey colour.

“ At the age of three years the plumage is perfect, although it still happens that some individuals have the violet-black of the neck sprinkled with some white feathers.”

COLYMBUS SEPTENTRIONALIS. THE RED-THROATED LOON.

RED-THROATED DIVER. SPECKLED DIVER. SPRAT LOON.

Colymbus septentrionalis. Linn. Syst. Nat. I. 220.

Colymbus septentrionalis. Lath. Ind. Ornith. II. 801.

Colymbus borealis, striatus, and stellatus. Lath. Ind. Ornith. II. 800, 801, 802. Young.

Red-throated Diver. Mont. Ornith. Dict. and Suppl.

Speckled Diver. Mont. Ornith. Dict. and Suppl.

Plongeon cat-marin ou a gorge rouge. *Colymbus septentrionalis.* Temm. Man. d'Ornith. II. 916.

Red-throated Diver. *Colymbus septentrionalis.* Selby, Illustr. II. 414.

Colymbus septentrionalis. Red-throated Diver. Jen. Brit. Vert. Anim.

Colymbus septentrionalis. Bonap. Comp. List. 65.

Adult about two feet five inches long ; with the bill bluish-black, slightly curved upwards, two inches and a third along the ridge, two-thirds of an inch in height at the base, with the sides prominent, the edges much inflected ; the sides of the head and neck, with the throat bluish-grey, the upper part of the head marked with small dark spots, the nape, hind and lower parts of the neck streaked with black and white, the fore part of the neck with a broad longitudinal band of deep orange-red ; the upper parts greenish-black, without spots ; the lower white, but the sides greyish-black, and a narrow dark grey band across the hind part of the abdomen.

MALE IN SUMMER.—The Red-throated Diver, which is considerably less than the Black-throated, and readily distinguished from it by the difference in the form of its bill, independently of its colouring, which is very dissimilar, has the body elongated, rather slender, and considerably depressed ; the neck long and rather thick ; the head of moderate size,

oblong, and anteriorly narrowed. The bill is nearly as long as the head, almost straight, being but slightly recurved, rather slender, but strong, compressed, tapering, and pointed; the upper mandible with the dorsal line almost straight and direct, the ridge convex, the sides prominently convex, the edges sharp, much inflected, the tip narrow and pointed; the lower mandible with the intercrural space very long and extremely narrow, the lower outline of the crura straight, the sides prominently convex, the dorsal line much ascending and straight, the edges sharp and much inflected, the tip acuminate; the gape-line a little recurved.

The mouth is of moderate width, but extensile, the gape-line commencing under the eyes; the palate with two prominent papillate ridges, and six medial series of reversed papillæ merging anteriorly into three; the tongue, an inch and nine-twelfths long, fleshy, trigonal, tapering, longitudinally grooved above, with the point extremely slender and horny. The œsophagus, fourteen inches long, is two inches in width along the neck, but contracts considerably in entering the thorax, and again enlarges, the proventriculus being two inches in breadth. The stomach is rather large, muscular, roundish, an inch and ten-twelfths in breadth, two inches in length, its lateral muscles of moderate thickness, the epithelium dense, thick, and rugous, with roundish, concave grinding surfaces. The intestine, five feet two inches long, varies in width from eight-twelfths to five-twelfths. The cœca are two inches and nine-twelfths in length, half an inch in breadth near the end, which is rounded. The rectum, only two inches in length, has a globular dilatation, an inch and a half in diameter.

The nostrils, small, linear, direct, and pervious, are four-twelfths long, and have a curious slender lobe-like flap above; the aperture of the eye four-and-a-half-twelfths; that of the ear nearly a twelfth-and-a-quarter. The feet are short, and placed at the extremity of the body; the tibia covered by the skin of the body to the end; the tarsus short, extremely compressed, edged before and behind, covered all over with angular scales. The hind toe extremely small, elevated, connected with the second by a membrane, which is partly free and

lobiform ; the anterior toes long, the outer longest ; the inner with a two-lobed membrane ; the interdigital membranes narrow, and emarginate ; the middle toe with fifty-four scutella. The claws are small, depressed, oblong, convex above, rounded at the end.

The plumage is short, dense, and firm ; on the head and neck very short and blended ; the feathers oblong, all rounded at the end ; those on the body glossy. The wings are of moderate length, narrow, and convex, of thirty-two quills ; the primaries strong, tapering, the first longest, the second scarcely shorter, the rest rapidly decreasing ; the secondaries broadly rounded. The tail is extremely short, rounded, of twenty rather firm, rounded feathers, of which the medial are eight-twelfths longer than the lateral.

The bill is bluish-black. The iris bright red. The feet brownish-black externally, pale bluish flesh-coloured internally ; the webs flesh-coloured ; the claws yellowish-brown at the base, dusky at the end. The fore part and sides of the head, with the throat and the sides of the neck more than halfway down, are bluish-grey ; the upper part of the head grey with small dusky spots ; the nape and hind neck longitudinally streaked with greenish-black and white, the edges of the feathers being of the latter colour and elevated. On the fore part of the neck is a broad band of deep orange-red about three inches in length. The lower part of the neck all round is longitudinally streaked or spotted with brownish-black and white. The upper parts are brownish-black, glossed with green, and without any white spots ; the lower parts glossy white, excepting the sides, which are greyish-black, the axillar feathers, which have a narrow medial dark grey streak, a narrow band of dark dusky grey across the hind part of the abdomen, and most of the feathers under the tail, which are of the same colour.

Length to end of tail 26 inches, to end of wings 24 ; extent of wings 44 ; wing from flexure $11\frac{3}{4}$; tail $2\frac{1}{2}$; bill along the ridge $2\frac{3}{12}$, along the edge of lower mandible $3\frac{7}{12}$, its height at the base $\frac{8}{12}$; tarsus 3 ; hind toe $\frac{1}{2}$, its claw $\frac{2}{12}$; second toe $2\frac{7}{12}$, its claw $\frac{4}{12}$; third toe 3, its claw $\frac{5}{12}$; fourth toe $3\frac{1}{2}$, its claw $\frac{3}{12}$.

FEMALE.—The female is similar to the male, but smaller. Length to end of tail 23 inches ; extent of wings 41.

HABITS.—From the beginning of October to the middle of May, numerous individuals of this species are met with on most parts of our coasts, but more especially in bays and estuaries, the young birds being proportionally more numerous in the southern than on the northern shores, although many remain all winter even among the Shetland and Orkney islands. At that season they are very abundant in the Firths of Forth and Clyde, where I have often had occasion to observe their movements. When proceeding to a distance they advance in a direct course, rapidly moving their outstretched wings, and keeping at a great height. Their flight is surprisingly quick, or at least ought to seem so in the eyes of one who has been taught that large wings and prominent sterna indicate the greatest vigour in this respect. They fly, I think, with even more speed than the Great Northern Divers, and even outstrip the Auks and Guillemots, not to speak of Gulls and other hoverers. These white-breasted birds, with their long outstretched necks, and ever-moving wings, present a curious and interesting sight to him who traverses these narrow seas in an open boat in quest of game. But small indeed is his chance of shooting a Red-throated Diver, that bird, when on the water, being extremely vigilant, and seldom permitting a boat to approach within shot, although it will often allow a large vessel to pass quite near, and I have seen it rise from almost under the bows of a steamer, along with the Auks and Guillemots. When then, or on other occasions, taking wing from the water, it flies for many yards along its surface, its feet and wings plashing in a very curious manner. In alighting it comes down nearly erect, plunging up the water for a short way. Its activity in its proper element is astonishing ; it swims with extreme speed, keeping deep in the water, and sometimes only allowing its head and neck to emerge. In diving it slips as it were out of sight without noise or flutter, and under the water it pursues its way with great speed, using its wings as well as its feet. Its food consists of small fishes, especially

sprats, young herrings, and codfish, as well as crustacea, and I have generally found numerous pebbles and bits of gravel in its stomach. It is neither gregarious, nor yet solitary, several individuals being often seen together, although they seldom keep very near each other, and in most cases the birds occurring dispersed at great distances.

In the end of spring, having paired, they retire northward, the greater number probably betaking themselves to the arctic regions, although very many remain to breed by the inland lakes of the Highlands, Hebrides, Orkney, and Shetland Islands. In Lewis, North Uist, and Benbecula, which are singularly intersected by arms of the sea, and covered with pools and lakes, great numbers are seen during the breeding season. The sea being at hand, they usually fish there, returning at intervals to the lakes, until incubation has commenced. The nest is placed on an island, or tuft, or among the herbage near the margin, or even on the stony beach, of a lake or pool, and is composed of grass, sedge, and heath, or other easily-procured plants, generally in small quantity, and neatly put together. The eggs, in so far as I am aware, are always two; but it is stated by some that three as frequently occur. They are of an elongated oval form, the two of the same nest very unequal, the larger three inches in length, and an inch and eleven-twelfths in breadth. They are of a deep or pale olive-brown, or dull greenish-brown, or pale brownish-green colour, spotted and dotted with umber, more densely at the larger end. The male continues with the female, and is said to take his place on the eggs occasionally. The female continues to sit, crouching over her eggs, until a person comes very near, when she starts forward, plunges into the water, and on emerging usually takes to wing, but sometimes swims about with great anxiety, as does the male, should he happen to be present. On being deprived of their eggs, they may be heard for several evenings lamenting their loss with loud melancholy cries. The usual notes, however, are harsh, and somewhat resemble those of the Gannet. The young, at first covered with greyish-black down, betake themselves to the water soon after birth, and continue there under the guidance of their parents until able

to fly, when they all wing their way to the sea. The eggs are laid in the beginning of June, and the young fledged by the middle of August.

Like the Great Northern Diver, this species is more easily procured by lying in wait on the shore in places frequented by it; but it is less addicted than that species to fishing close to the margin of the sea, by far the greater number keeping well out in the firths and lochs, and many frequenting the open sea at a great distance from land. In the breeding season, when on fresh-water lakes, it is extremely vigilant and suspicious, swims off to the opposite side, with elevated head, when a person appears even at a distance, and cannot be shot without much trouble. I have seen it caught on one of the hooks of a fishing-line baited with a sand-eel, and it is sometimes entangled in the herring and salmon nets. It is very tenacious of life, and although severely wounded commonly escapes, as it can easily outstrip a boat.

YOUNG.—When fledged, the young are said by M. Temminck to be “of a pretty uniform blackish-brown on the upper part, and whitish on the lower.” I have not examined them in that state; but from November to February they are as follows:—

YOUNG IN WINTER.—The bill is flesh-coloured at the base, pale bluish-grey toward the end, the ridge dusky-brown, becoming paler beyond the middle. The iris brown. The feet externally dusky, internally and with the ridge of the tarsus light bluish-grey; the membranes dusky at the sides, dull flesh-coloured in the middle; the claws pale flesh-colour, brown at the end. The upper part of the head and the hind-neck are greenish-grey, finely streaked with pale grey, the latter predominating on the neck; the cheeks and sides of the neck white, with faint grey markings; the fore part of the neck also white, and still more faintly marked with grey in small specks; the tips of the feathers being of that colour for half way down the neck. All the upper parts are of a deep greenish-grey, glossy, and finely speckled with greyish-white, of which there are two oblong divergent spots on each

feather, those on the hind part of the back smaller and fainter. The primary quills are blackish-grey, tinged with green, the secondaries like the feathers of the back ; the tail-feathers tipped with greyish-white. From the middle of the neck the lower parts are pure white, excepting the sides under the wings, which are dark-grey, speckled with white, the axillar feathers, which have a medial streak of grey, a faint band across the hind part of the abdomen, formed by the grey margins of the feathers, most of those under the tail being also similarly tipped. There is no obvious difference between the male and the female at this age. The dimensions of two are as follows :—

MALE.—Length $24\frac{1}{4}$ inches ; extent of wings 41 ; wing from flexure $10\frac{9}{12}$; tail $2\frac{1}{2}$; bill along the ridge $2\frac{1}{12}$; along the edge of lower mandible $3\frac{2}{12}$; tarsus $2\frac{9}{12}$; outer toe $3\frac{1}{12}$, its claw $\frac{4}{12}$.

FEMALE.—Length $24\frac{1}{4}$ inches ; extent of wings 40 ; wing from flexure $10\frac{1}{2}$; tail $2\frac{1}{4}$; bill along the ridge $1\frac{1}{12}$; along the edge of lower mandible $2\frac{9}{12}$; tarsus $2\frac{9}{12}$; outer toe $3\frac{2}{12}$, its claw $\frac{3}{12}$.

PROGRESS TOWARD MATURITY.—In the first spring the feathers of the throat and neck are partially shed, and a patch of yellowish-red appears on the fore part. After the autumnal moult the bill is much darker ; the sides and hind part of the neck are grey ; the upper parts brownish-black, tinged with green, and still speckled with white spots, which however are much smaller ; the lower parts pure white, excepting the sides, which are as dark as the back, the streaks on the axillars, and the band across the abdomen, which is dusky ; most of the lower tail-coverts pure white, the immediate series only being dusky, unless at the end.

In spring the head and neck become coloured as in the adult ; the bill is now nearly all black, and much stronger ; but the feathers of the body remain until the autumnal moult. The plumage is then that of the adult in winter, with the exception of some white spots on the back and scapulars.

ALCINÆ.

AUKS AND ALLIED SPECIES.

SOME of the Alcinae approximate to the Colymbinae in the form of their bill, while others have that organ of a peculiarly vertically-expanded form ; but all differ from the family just mentioned in having the body very compact, the neck short and thick, the head large and broadly ovate, and the feet not placed so far behind.

The bill is short, or of moderate length, much compressed, pointed, but varies from slender and tapering to cultriform, or even, viewed laterally, sub-triangular. The mouth of moderate width ; the palate flat, with longitudinal ridges ; the tongue slender, trigonal, thin-edged, pointed ; the œsophagus very wide, generally much dilated at its lower part ; the stomach roundish, with a moderately thick muscular coat, and dense, plicate epithelium ; the intestine rather long, with moderate cœca.

The nostrils small, linear, basal, sub-marginal ; the eyes small ; the apertures of the ears very small. The feet short, placed far behind ; the tibia bare for a short space ; tarsus very short, compressed, scutellate ; toes three, of moderate length, connected by membranes ; claws rather small, arched, compressed, acute.

The plumage is dense, short, soft, and blended. The wings small, narrow, convex, pointed ; the tail very short and rounded.

These birds belong entirely to the northern hemisphere, and inhabit the seas and coasts of the cold and temperate regions of both continents. Fitted by their compact form and dense short plumage to bear all vicissitudes of weather, they

seek their food as well on the open sea as along the shores. Their short firm wings, while they enable them to fly to great distances, are also the principal instruments by which they pursue under water the small fishes and crustacea on which they feed. In summer, vast multitudes betake themselves to the most northern regions, while others of the same species occupy suitable places in the northern temperate and intermediate zones. Thus, the Razor-bill, Guillemot, and Auk, are to be found, in June and July, equally in Scotland, Feroe, Iceland, and Spitzbergen. It is on the shelves or in the crevices of precipitous rocks that they breed, few or none of them forming a nest, though some of them conceal themselves in burrows. In most of the species only a single very large egg is laid. The young soon betake themselves to the sea, and toward the middle of autumn they and the old birds remove southward, few of them, however, proceeding so far as the Mediterranean. They are seldom seen on shore, unless at their breeding places, the position and form of their feet being very unfavourable to walking, and on the rocks they stand in a much inclined position. Eight species rank as British.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. URIA. GUILLEMOT.

Bill of moderate length, nearly straight, stout, compressed, tapering, acute; nostrils sub-basal, longitudinal, linear; tarsus short, stout, compressed; toes of moderate length, the middle toe longest; claws rather small, arched, compressed, acute; wings rather small, narrow, acute, the primary quills incurvate; tail very short, rounded, of twelve or fourteen feathers.

1. *Uria Brunnichii*. *Brunnich's Guillemot*. Bill stout, considerably decurved at the end, black, with the basal margin of the upper mandible whitish, the angle of the lower prominent, its sides concave; tail of fourteen feathers.

2. *Uria Troile. Foolish Guillemot.* Bill rather stout, slightly decurved toward the end, black, the angle of the lower mandible slightly prominent, its sides convex ; tail of twelve feathers.

3. *Uria lacrymans. Bridled Guillemot.* Bill rather slender, straight, black, the angle of the lower mandible slightly prominent ; tail of twelve feathers ; eye encircled by a white line, which extends backwards and downwards to the length of an inch and a half.

4. *Uria Grylle. Black Guillemot.* Bill black ; feet coral-red. In summer the plumage black, excepting a patch on the wing ; the lower wing-coverts and axillars, which are white. In winter the prevailing colour white, variegated with black.

GENUS II. MERGULUS. ROTCHE.

Bill very short, stout, a little decurved, as broad as high at the base, moderately compressed toward the end ; nostrils basal, oblong, with a horny operculum ; tarsus very short, compressed, with anterior oblique scutella ; toes of moderate length, the inner much shorter than the outer, which is about equal to the middle toe ; claws moderate, arcuate, compressed, acute ; wings small, narrow, acute ; tail very short, slightly rounded, of twelve feathers.

1. *Mergulus Alle. Little Rotche.* Black above, white beneath. In summer the throat and fore-neck brownish-black.

GENUS III. UTAMANIA. RAZOR-BILL.

Bill shorter than the head, very high, much compressed, with the outline of the upper mandible arcuato-decurvate, the sides nearly flat and erect, with several transverse curved grooves, the edges inflected and sharp ; tarsus short, stout, compressed ; toes of moderate length, the outer slightly shorter than the middle toe ; claws rather small, arched, compressed, acute ; wings rather short, very narrow, pointed ; tail short, narrow, cuneate, of twelve feathers.

1. *Utamania Torda*. *Common Razor-bill*. Bill black, with four transverse grooves, one of which is white.

GENUS IV. ALCA. AUK.

Bill longer than the head, very high, much compressed, with the outline of the upper mandible arcuato-decurvate, the sides nearly flat and erect, with numerous transverse grooves, the edges inflected and sharp; tarsus very short, stout, compressed; toes of moderate length, the outer slightly shorter than the middle toe; claws rather small, arched, compressed, rather obtuse; wings extremely small, much pointed; tail short, pointed, of fourteen feathers.

1. *Alca impennis*. *Great Auk*. Length about a foot and a half.

GENUS V. MORMON. PUFFIN.

Bill about the length of the head, nearly as high as long, extremely compressed, obliquely grooved on the sides; nostrils linear, marginal; tarsus very short, little compressed, scutellate; outer and middle toes about equal; claws strong, arched, acute, that of the inner toe hooked; wings short, narrow, much curved, acute; tail very short, slightly rounded, of sixteen feathers.

1. *Mormon arcticus*. *Arctic Puffin*. Bill with three curved furrows on each mandible; the basal rim and first ridge of both mandibles dull yellow, the intervening broad space greyish-blue, the rest bright red; a flattened triangular horny body on the upper eyelid, and an elongated adherent plate on the lower.

URIA. GUILLEMOT.

THE genera of this family are so closely allied to each other, that descriptive characters, such as are given in this work, must in many particulars be nearly the same in all. In the present group, the body is full, ovate, and rather depressed ; the neck short and thick ; the head large, ovate, anteriorly narrowed.

Bill of moderate length, stout, nearly straight, compressed, tapering, acute ; upper mandible with the nasal sinus broad and feathered, the dorsal line straight, becoming arcuato-decurvate toward the end, the ridge narrow but obtuse, the sides rapidly sloped, the edges sharp and inflected, with slight notches close to the small, bluntish tip ; lower mandible with the angle rather long and narrow, the dorsal line ascending, and straight or slightly concave, the back very narrow, with a groove at the base, the edges sharp and inflected, the tip very acute.

Mouth rather wide ; anterior palate flat, with five prominent lines. Tongue slender, trigonal, tapering, pointed, thin-edged at the end. Œsophagus wide, much dilated below ; stomach moderately muscular, with a dense plicate epithelium ; intestine long and rather wide, with moderate cæca.

Nostrils sub-basal, longitudinal, linear. Eyes rather small. Aperture of ear very small. Legs short, placed far behind ; tibia bare for a short space ; tarsus stout, compressed, scutellate ; no hind toe ; anterior toes webbed, the inner much shorter than the outer, which is nearly as long as the middle toe ; claws rather small, or moderate, arched, compressed, rather acute.

Plumage dense, blended, firm but soft, on the head and throat velvety. Wings rather small, narrow, acute ; primary

quills tapering, curved, the first and second longest ; secondaries very short, rounded. Tail very short, rounded, of twelve or fourteen feathers.

The Guillemots are active and rather lively birds, which inhabit the northern seas, procuring their food, which consists of small fishes and crustacea, by diving from the surface and pursuing it under water, in which they glide with great rapidity by means of the action of their wings. These organs, though small, being quickly moved by strong muscles, enable them to fly with great speed. Their feet, however, having a position and form unfavourable to locomotion on land, are scarcely used for that purpose, but enable them to paddle along very expertly on the water. They form no nests, but deposit their extremely large pyriform eggs on the bare surface of rocks ; and there also their young ones crouch until partially or entirely fledged. The eggs afford good eating ; but the flesh of both young and old is rank and unpleasant.

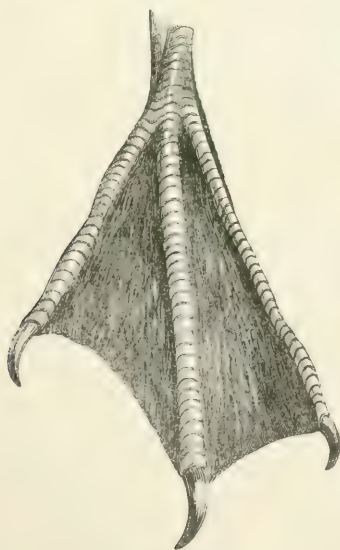


FIG. 79.

URIA BRUNNICHI. BRUNNICH'S GUILLEMOT.

THICK-BILLED GUILLEMOT. LARGE-BILLED GUILLEMOT.

Uria Brunnichii. Sabine. Trans. Linn. Soc. XII.

Uria Brunnichii. Flem. Brit. Anim. 134.

Guillemot à gros bec. Uria Brunnichii. Temm. Man. d'Ornith. II. 221.

Uria Brunnichii. Bonap. Comp. List, 65.

Bill stout, considerably decurved at the end, black, with the basal margins of the upper mandible whitish, the angle of the lower prominent, and its sides concave; plumage deep black above; sides of the head and fore part of upper neck tinged with brown; lower parts and tips of secondaries white; sides streaked with black; tail of fourteen feathers; interdigital membranes full. In summer, the whole head and throat blackish-brown. In winter, the sides of the head behind the eyes and the throat white.

MALE IN SUMMER.—Brunnich's Guillemot, which may readily be distinguished from the other species by its shorter, deeper, and thicker bill, has the body stout and rather depressed; the neck short and thick; the head large, broadly oblong, narrowed before. The bill is much shorter than the head, stout, compressed, tapering, pointed; upper mandible with the dorsal line arcuato-decurvate, the ridge rather broad and rounded at the base, gradually narrowed, the sides sloping, the edges inflexed for half their length, sharp and direct toward the end, with a distinct notch close to the tip; lower mandible with a prominent angle, beyond which to the acute tip the dorsal line is very considerably incurvate, the sides somewhat concave; gape-line extending to beneath the eyes.

Nostrils linear, at the lower anterior edge of the nasal

sinus; eyes of moderate size; apertures of ears very small. Feet short, placed far behind; tibia bare and roughly scaly at its lower part; tarsus stout, compressed, anteriorly with a single row of small scutella, interiorly with large scutelliform scales, exteriorly with smaller, the hind part with very small tubercular scales. Outer toes nearly equal, and longer than the tarsus; third toe with thirty-five scutella; interdigital membranes full; inner toe with a narrow two-lobed membrane, outer toe marginate; claws strong, gently arched, rather acute; inner side of the third toe expanded.

The plumage is dense, very soft, and blended; on the head very short, stiffish, but velvety. Wings of moderate length, narrow, incurvate toward the end, pointed; the first quill longest; secondaries short, rather broad, rounded. Tail very short, of fourteen soft, broad, narrowly rounded feathers.

Bill black, the basal half of the margin of the upper mandible greyish-white. Feet dusky, tinged with flesh-colour; claws black. The sides of the head, the throat, and the sides of the neck, sooty-brown; the upper part of the head, hind-neck, back, and wings glossy black, with a slight tinge of green anteriorly, and of brown behind; primary quills and tail-feathers blackish-brown; secondaries, the inner four excepted, tipped with white; all the lower parts white, except some dusky streaks under the wing, the anterior edge of the wing, and the primary coverts, which are brownish-grey, as are the quills on their inner webs.

Length to end of tail 18 inches; bill along the ridge $1\frac{7}{12}$, along the edge of lower mandible $2\frac{8}{12}$, its height at the angle $\frac{8}{12}$, its breadth at the nostrils $\frac{5}{12}$; wing from flexure $8\frac{3}{4}$; tarsus $1\frac{4}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{8}{12}$.

FEMALE IN SUMMER.—Similar to the male, and not much smaller.

Length about 17 inches.

HABITS.—Brunnich's Guillemot frequents the arctic seas in great numbers during the summer. It has been observed at Spitzbergen, Greenland, Davis' Straits, Baffin's Bay, Ice-

land, and Feroe, as well as on the coasts of Norway. But it does not migrate so far southward as the Common Guillemot, and is of very rare occurrence in the British seas. It was seen by Colonel Sabine, in July, on the coast of Kerry. Captain Sir James C. Ross met with it at Unst, the most northern of the Shetland Islands, as well as in several parts of Scotland. The only British specimen I have seen I found among some skins from Orkney, belonging to the late Mr. Wilson, Janitor to the Edinburgh University, in the museum of which it was soon after deposited. Mr. Audubon was informed that it occurs in winter as far south as the Bay of Boston, but did not meet with any there, or even in Labrador, although he received a specimen from Eastport, in Maine. On the other hand, it is represented as very plentiful in the arctic seas in summer. My descriptions are taken from specimens obtained there. Appended to one of them by the donor, the surgeon of a whaler, is the following note:—"Uria Brunnichii (Loom). Coccygeal glands large; two large apparently sanguiferous oblong flat bodies, lying obliquely from before backwards over the orbits. Food amphiboda. Stomach lined with a hard horny substance, easily separated from the fibrous coat. Egg rather pyramidal, $3\frac{1}{4}$ inches long axis, $1\frac{1}{2}$ to $1\frac{1}{4}$ short axis, of a green colour, with black spots. Hatches in clefts of the rocks, from the 20th of June to the 15th of July. Iris of a dark brown colour; eye not at all prominent, sunk deep into the orbit, and well covered with the eyelids. Rather shy, never appearing to come near the ships for the purpose of eating any offals of the whale, &c. Swim in numbers from two to three up to forty or fifty. They never fly high, but along the surface of the ice or water."

The habits of this species are represented as being in all respects very similar to those of the Common Guillemot.

YOUNG.—We have no satisfactory accounts of the young, or of their progress toward maturity.

ADULT IN WINTER.—An individual figured by Mr. Audubon is thus described:—"Bill black. Iris dark brown.

Feet dusky, tinged with red, The general colour of the plumage is greyish-black on the upper parts, on the head tinged with brown. The sides of the head and neck, its fore part, the breast, abdomen, edges of the wings, and the tips of the secondaries, white ; the sides shaded with greyish-black ; a line of the same behind the eye.

“ Length $18\frac{1}{2}$ inches ; extent of wings 30 ; wing from flexure 8 ; bill along the ridge $1\frac{2}{12}$.”

REMARKS.—The tail-feathers have been said to be twelve ; but in an arctic specimen before me I find thirteen, with a gap left by the wanting one. The white of the lower parts terminates on the throat in an acute angle, whereas in the Common Guillemot it is broadly rounded there. The interdigital membranes are full, the margin of the outer rounded ; whereas in the Common Guillemot they are emarginate, the outer deeply cut out.

URIA TROILE. FOOLISH GUILLEMOT.

COMMON GUILLEMOT. WILLOCK. LUM. LUNGY. LAMHI, or LAVY. MURRE.
MURSE. MARROT. TINKERSHEER. SCOUT. SKIDDAW.
SEA-HEN. SCUTTOCK.



FIG. 89.

Colymbus Troile. Linn. Syst. Nat. I. 220.

Uria Troile. Lath. Ind. Ornith. II. 795.

Guillemot a capuchon. Uria Troile. Temm. Man. d'Ornith. II. 521.

Foolish Guillemot. Mont. Ornith. Dict. and Suppl.

Lesser Guillemot. Mont. Ornith. Dict.

Foolish Guillemot. Uria Troile. Selby, Illustr. Brit. Ornith. 420.

Uria Troile. Jenyns, Brit. Vert. Anim. 258.

Uria Troile. Bonap. Comp. List, 65.

Bill rather stout, slightly decurved toward the end, black, the angle of the lower mandible slightly prominent, and its sides convex; plumage greyish-black above; sides of the head and fore part of upper neck tinged with brown; lower parts and tips of secondaries white; sides streaked with black; tail of twelve feathers; interdigital membranes emarginate. In summer, the whole head and throat brown. In winter, the sides of the head behind the eyes and the throat white.

MALE IN SUMMER.—The Common Guillemot, so plentiful along our coasts, and so familiarly known to those who reside near its breeding haunts, is yet not so satisfactorily described as might be expected, it having been confounded with another species, which has of late years been distinguished from it, although some doubts yet remain as to the propriety of separating them. It is of the same form, and nearly of the same size and colouring, as Brunnich's Guillemot. The bill is shorter than the head, rather stout, compressed, tapering, pointed, very slightly decurved at the end; upper mandible with its dorsal line slightly arcuato-decurved, the ridge not broad but rounded at the base, gradually narrowed, the sides sloping, the edges inclinate for half their length, sharp and direct toward the end, with a distinct notch close to the tip; lower mandible with a considerably prominent angle, though much less so than in the last species, beyond it to the tip the dorsal line slightly concave, the sides rather convex at the base, flat toward the end, the tip slender and pointed; gape-line extending to beneath the eyes.

Nostrils linear, at the lower anterior edge of the nasal sinus; eyes rather small; apertures of ear very small. Feet short, placed far behind; tibia bare for about half an inch, tuberculately scaly; tarsus stout, compressed, anteriorly with a single row of rather small scutella, interiorly with large scutelliform scales, exteriorly with smaller, the hind part with minute tubercles. Outer toes nearly equal, and longer than the tarsus; third toe with thirty scutella; interdigital membranes emarginate, the outer deeply so; inner toe with a narrow bilobate membrane; claws strong, gently arched, rather acute; inner side of the third toe expanded.

The plumage dense, very soft, and blended; on the head very short, firm, but velvety. A distinct line, or groove, separating the feathers, extends backwards, about an inch, from each eye; wings rather short, narrow, incurvate toward the end, pointed, the first quill longest. Secondaries very short, rather broad, rounded; tail very short, of twelve broad, rounded feathers.

Bill black; iris brown; feet dusky, tinged with reddish;

claws black. The head and upper part of the neck all round black, tinged with brown, disappearing on the middle of the neck behind; the lower hind neck and the upper parts greyish-black, except the tips of the secondary quills, which are white, the inner four excepted; from the middle of the fore neck to the tail white, the sides under the wings streaked with blackish-grey.

Length to end of tail $17\frac{1}{2}$ inches; extent of wings 28; bill along the ridge $1\frac{9}{12}$, along the edge of lower mandible $2\frac{1}{2}$, its height at the angle $6\frac{7}{12}$; wing from flexure $8\frac{5}{12}$; tail nearly 2; tarsus $1\frac{5}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{6}{12}$.

FEMALE IN WINTER.—There is no apparent external difference between the male and the female.

HABITS.—Individuals of this species are to be seen dispersed in small companies, or sometimes singly, over all our seas, during the long period intervening between the termination of one breeding season and the commencement of the next. In estuaries, bays, or narrows, where herring or other fry is abundant, they congregate in vast numbers, along with Auks, Red-throated Divers, and Gulls of various species. They swim with great speed, dive with celerity, and pursue under water, with feet and wings in action, their prey, which consists of small fishes and crustacea. Generally, they withdraw at night to the open sea, and often, when not attracted to the coasts by shoals of fry, may be seen dispersed over the waters at a great distance from land. When flying to a distance, they proceed in small companies, one individual following another, in a line, close over the waves, with rapid beats of their wings, and with great speed. When alarmed, they dive, and emerge at a distance, or sometimes take to wing, rising with ease at a low angle, and splashing the water. Although many are shot every year, their flesh is not esteemed, it being dark-coloured, rank, and disagreeable. But it is when assembled at their breeding-places that the greatest havoc is made amongst them. They are then pitilessly shot down from their stations on the rocks, or when flying to or from them, or when swimming about, it being in general easy

to get within shot of them, as they are little alarmed by the near approach of a boat.

In the end of April, great numbers may be seen flying in strings along the coasts toward their breeding-places, which are abrupt cliffs, equally resorted to by Razorbills and other birds; such as Flamborough Head, the Fern Islands, St. Abb's Head, the Bass Rock, Fowlsheugh, near Stonehaven, Troup Head, and numberless others all round the coast of Scotland, and in its islands, as well as in Wales and Ireland. No preparation is made for the reception of the eggs, which are deposited on the little shelves or ledges, or in hollows of the rock, each female laying a single egg, though often a great number may be seen together, as closely placed as the birds can sit upon them. It appears wonderful how each can distinguish its own in such cases. A very little inequality suffices to steady an egg, and it is further prevented from rolling over by its pyriform shape, which, however, has not all the effect generally supposed. Many eggs fall in stormy weather, and are driven over by the birds themselves when flying off abruptly on being fired at. When the cliffs are high, and other birds breed upon them, the Guillemot occupies a zone above the Kittiwakes, and below the Razorbills; but when the latter are not present, they disperse over the face of the rocks. Coming in from sea at great speed, they alight quite abruptly, without injury, as they invariably ascend in a curved line, which breaks the force of their flight. When they leave their stations they shoot away in a similar curve. But often, when annoyed by shots, they ascend in the air, wheeling in circles, and emitting shrill cries. The eggs vary little in form, being regularly pear-shaped, about three inches and a quarter in length, and two inches in their greatest breadth, but they differ greatly in colour, being, however, mostly of some tint of green, or greenish-yellow, sometimes white, and marked with angular black or brown lines and spots. They afford good eating, and are gathered in great quantities for that purpose.

Incubation appears to last about a month. The young, at first covered with stiffish down, of a greyish-black colour above, and white beneath, are fed for some weeks with small

fishes, and other marine animals brought by their parents. Often young birds of very small size, unfledged, or in various stages, may be seen swimming about in the vicinity of the rocks, and it has been alleged that they are usually carried to the sea by their parents; but I think these are rather accidental cases, for by far the greater number remain in their stations until they can fly. Mr. Waterton says, the men about Flamborough Head assured him that "when the young Guillemot gets to a certain size, it manages to climb upon the back of the old bird, which conveys it down to the ocean." I do not think the young could hold on in such a situation. Others say the old Guillemot takes her chick by the neck in her bill, and thus conveys it to the sea. No one has seen a descent in either way.

Dr. Edmondston, Balta Sound, has, among notes with which he has favoured me, the following:—" *Colymbus Troile*.—This species is very numerous on some of the cliffs. It lays one very large egg on rocky shelves, without forming any nest. The shell is thick and rough, and thus able to bear a little rolling, which it doubtless receives now and then on its *downy* bed. I do not believe what some fishermen have asserted, that it is glued to the spot when it is dropped. The would-be practical and the ignorant are just as egg-full of theory as those whom they sarcastically call the learned. The young is taken by the parent to sea when it is fledged; but, like that of the Razorbill, long before full growth. In general, both these convey their young to the water by seizing them by the skin of the back of the neck, as a cat does a kitten; but occasionally the young manage to balance themselves into the ocean. The eggs are excellent eating, not in the least fishy-tasted, much more delicately-flavoured than those of Ducks." They must be boiled hard, however, and then the white is firm, semi-transparent, of a bluish tint, the yolk granular and oily.

Mr. Audubon has a curious theory about these eggs. He found some of them white, as they may be seen occasionally in any breeding-place. "My opinion," he says, "is, that when first dropped they are always pure white, for on opening a good number of these birds, I found several containing

one egg ready for being laid, and of a pure white colour." I have a pure white egg taken from a Golden Eagle, and in a Red Grouse's nest a white egg also. Any dissecting ornithologist knows how and where eggs receive their colouring.

It is interesting to visit one of the great breeding-places, and in a boat proceed along the cliffs, whether a gun be used or not ; to stand on a near promontory and see the multitudes perched on the rocks, or flying out to sea, or returning ; or to look down from the summit upon the groups in sight, or startle from their stations a whole troop by letting down a large stone ; or to descend by some crevice, clinging with fingers and unshod feet to the little narrow ledges, and creep among the eggs, or be let down dangling on a rope, and half-trembling with fear and excitement. Very pleasant all this, but very unscientific and unphilosophical, as think the very small would-be-great men, who concoct prize-essays in colleges, and write popular treatises on the sciences, and have everything reduced to principles, and want only a Turkey-cock's wattles and tail to make a great figure in the world. The vain-glory of these persons, some of whom never observed a fact correctly, contrasts characteristically with the modesty of the Humboldts, and Cuviers, and Milne-Edwardses, and Owens, who never depreciate any truth, or despise any earnest endeavours.

"The Black Guillemot, the Common Guillemot, Razor-bill, Puffin, and Cormorant," writes my Skye correspondent, "all breed in great numbers on the groups of islands called Fladda and Ascrib. The Puffins are very numerous, the Black Guillelots are not so abundant. On a clear summer's morning, when the sea lies slumbering calmly under the all-diffused glow of sunshine, it is delightful to sit on the top of some cliff and see the many busy troops of Guillelots hurrying over the sparkling bosom of the blue waters, the sun lighting up the clear white plumage as they haste along. The view of the Long Island, from the peaks of Harris to the low sandy shores of Uist, on such a morning, is magnificent."

By the middle of August the young are all fledged, and then old and young disperse. The distribution of this species extends from Nova Zembla and Spitzbergen, over the whole

of the Celtic Sea, and along the coasts of Ireland and the western side of Britain. It appears to occur but very rarely in the Mediterranean. Along the eastern coasts of America, it proceeds, from the extreme north, as far as the Bay of New York.

YOUNG.—The young, while still covered with down, have the bill comparatively short, much compressed, dull flesh-coloured, the tip dusky; the feet dusky flesh-coloured. The head, throat, hind neck, and the upper parts, are brownish-black, the throat paler; the lower parts white. There is no white on the secondary quills of the first plumage, which is very lax.

The first feathers are gradually substituted by a second set, of firmer texture. The quills, their coverts, and the tail-feathers appear first, the secondaries tipped with white. The upper plumage is greyish-black; the cheeks and throat white, as well as all the lower parts. The bill is more elongated, and of darker tints, as are the feet. By the end of September the full plumage is obtained.

YOUNG IN FIRST WINTER.—The bill is shorter, and more slender than in the adult, of a yellowish-brown colour, the tips of both mandibles brownish-black. The feet are dull brownish flesh-colour, the webs dusky, the claws blackish-brown. The upper part of the head, the whole of the hind neck, and all the upper parts, of a dull blackish-grey, tinged with brown on the wings, the tips of the secondary quills, the inner four excepted, being, however, white. Continuous with the dark grey of the fore part of the head is a band passing under the eye to about an inch beyond it. The lower parts are white; the sides under the wings streaked with blackish-grey, the long feathers there having broad margins of that colour. The feathers on the upper hind neck are mottled with dull white, as are those at the base of the upper mandible.

PROGRESS TOWARD MATURITY.—In spring a change commences, which is completed in June, when the bird acquires

the appearance of the adult in summer, but may still be distinguished by its comparatively slender and light-coloured bill.

MALE IN WINTER.—When the autumnal moult is completed, a great part of the dark brown of the head and upper neck has been substituted by white, of which colour are the throat, the lower part of the cheeks, a band behind the eye, the sides of the neck, all the lower parts, and the tips of the secondary quills. The upper part of the head, the space from the bill to the eye, a band under and behind the eye, the hind neck, and all the upper parts of the body blackish-grey; the primaries and tail-feathers greyish-brown.

FEMALE IN WINTER.—There is no external difference by which the female may be distinguished.

REMARKS.—Guillemots in nearly all respects similar to that above described, but having a white ring about the eyes, and a narrow band or line of the same behind them, were generally understood to be of the same species until of late, when they have been separated under the name of *Uria lacrymans*.

URIA LACRYMANS. THE BRIDLED GUILLEMOT.

RINGED OR RING-EYED GUILLEMOT.

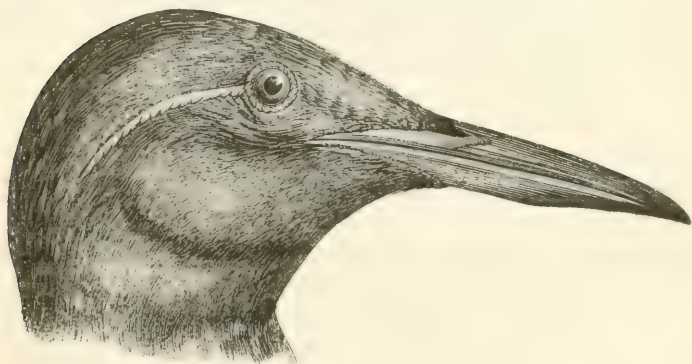


FIG. 81.

Guillemot bridé. *Uria lacrymans*. Temm. Man. d'Ornith. IV. 574.
 Ringed, or Bridled Guillemot. Yarr. Brit. Birds, II. 351.

Bill rather slender, scarcely decurved toward the end, black, the angle of the lower mandible prominent, and its sides convex; plumage blackish-grey above; sides of the head and fore part of upper neck tinged with brown; a line encircling the eye and extending backwards from it, white; lower parts and tips of secondaries white; sides streaked with blackish-grey; tail of twelve feathers; interdigital membranes full. In summer the whole head and throat brown. In winter the sides of the head behind the eyes and the throat white.

IF the Common Guillemot assumes a white ring around the eyes, and a line of the same colour directed backwards and downwards from them, it is not known under what circumstances it does so; and if individuals so marked belong

to a distinct species, it is not known at what age they assume these markings, or whether the young are similar to the adult, or the young of both species indistinguishable. The descriptions given by British writers are so loose that they convey little information, and certainly afford no conviction. Until the history of the Ring-eyed Guillemot is as correctly detailed as that of the common species, it must remain doubtful whether it be distinct or not. I have seen many Guillemots with ringed eyes, some of them obtained in the Firth of Forth, some seen dead on the sandy beaches between Aberdeen and Ythan Mouth; but, having considered them simply as Common Guillemots, I paid little attention to them, and, on searching in my collection, find only one specimen, which, however, is very interesting, it being a young bird in its first winter plumage, thus proving that the ring is not peculiar to old birds, as had been supposed.

ADULT IN SUMMER.—In one of my note-books I find the following statements:—"Uria Troile. April 28, 1824. A specimen shot in the Firth of Forth a few days ago. Examined when fresh. Beak deep black, tinged with bluish-green; angle (that is, the skin at the opening of the mouth) yellowish. Edge of orbit (eyelids) black, very small. Eye hazel. Feet dusky, fore part of tarsus and toes brownish-yellow; claws bluish-black, pale at the end. Eye encircled with pure white, a line of which extends downwards along the side of the neck for an inch and a half, where there is a natural division of the feathers, the lower edge of which only is white. Head and neck to half way down anteriorly deep brown, tinged with grey; the hind-neck dark grey colour, being continued from the head over the back, including the tail and wings. Tips of secondaries, excepting two first and two last, white. Upper and fore edge of wings pale brown; primaries of the same dark-brown, glossed with greenish. Tail very short. Dimensions—beak $1\frac{7}{8}$; length 17; tarse $1\frac{1}{2}$; toe $2\frac{1}{4}$; extent 28.

"Uria Troile. Another specimen shot at the same time. The colours are exactly the same, but there is no white round the eye, nor along the line which extends downwards from it."

Mr. Yarrell's description :—" An adult bird in its breeding-plumage, obtained at Grimsay Island (near Iceland), has the beak black, rather more slender in form than that of the Common Guillemot obtained at the same locality ; the irides dark ; all round the eye a narrow ring of pure white, and a line of the same colour about an inch and a half long, passing from the eye backwards and downwards on the neck ; head, chin, throat, upper part of neck all round, lower portion of neck behind, back, wings, and tail, dull greyish-black ; tips of secondaries, and all the under surface of the body, white ; legs, toes, and membranes, brownish-black. The whole length about eighteen inches ; the wing, from the joint to the end, eight inches."

M. Temminck briefly describes this species in its summer plumage thus :—" Head, cheeks, and upper part of the fore-neck, of a smoked brown tint ; the rest of the upper parts of a pure black ; the white circle around the eyes, and the lacrymal line at the hind part of that organ very strongly marked on the dark plumage of the head. The meshes of the flanks very large and distinct."

ADULT IN WINTER.—According to M. Temminck, " the top of the head, the space between the eye and the bill, a longitudinal band behind the eyes, and all the upper parts, of a very decided black ; all the lower parts and the tips of the secondary quills, pure white ; white is also seen between the band behind the eyes and the black of the nape ; it extends toward the occiput, where that colour forms an open angle ; small white feathers, slender, and very close together, form a circle around the eyes, and a narrow streak directs itself backwards, passing a little beyond the temples ; the black colour of the lateral part of the neck forms towards the breast, a collar faintly indicated by blackish-grey ; meshes of the flanks very distinct ; bill greyish-black ; inside of the mouth yellow ; iris brown ; feet yellowish-brown. Length from 15 to 16 inches."

HABITS.—Mr. Gould remarks :—" Although we have figured this bird under the name of *Lacrymans*, we are doubt-

ful of its specific value, bearing as it does so close a resemblance to the common species, *Uria Troile*, and from which it differs only in the white mark which encircles the eyes, and passes down the sides of the head. It inhabits the same localities, and is often found in company with the common species, and that too on various parts of our coast, particularly those of Wales, where, we have been informed, both kinds are equally numerous." Mr. Yarrell states that he has learned "that this Ringed Guillemot has been taken on the coast, both in Yorkshire and Durham." Messrs. Baikie and Heddle inform us that "several specimens of this rare species have been shot in Orkney, one of which is now preserved in the Museum at Kirkwall." Mr. Yarrell intimates that Mr. Proctor some years ago found it abundant in the Island of Grimsay, about forty miles north of Iceland, along with Brunnich's and the Common Guillemots, and that the inhabitants considered them all specifically distinct. Its habits, it is said, are the same with those of the Common Guillemots, only that it assumes a breeding station lower on the rocks than it. In short, some observers view the Ringed Guillemot as a species, others as a variety of the Common. One or two of the many idle sportsmen might settle the question, and probably find as much pleasure in exploring the breeding-places of the Guillemot, as in merely walking day after day among heather, and shooting grouse after grouse.

YOUNG IN WINTER.—A prepared specimen in my collection, known to be young by the small size and pale colour of its bill, was shot in the Firth of Forth in winter. The bill is pale umber-brown, changing to dark-brown in the terminal half. The tarsi and toes also pale brown, the webs dusky, the claws blackish-brown. The upper parts are dark-grey, without any shade of brown. A band of the same passes under the eye, enlarges behind it, and proceeds backwards and downwards, for an inch and a half, along the line of separation of the feathers, and margined above with a line of white feathers, continuous with a narrow ring of the same colour margining the eyelids. Above this line and behind the eye, is a broad band of white; the feathers of the nape all

across and for the space of an inch, are mottled with white. The tips of the secondary quills also are white, and that colour occupies the throat, the fore part and sides of the neck, and all the lower parts, the feathers on the sides under the wing, however, being streaked with grey. The feathers on the lower surface of the wing also are white, the primary coverts only being very pale-grey. The bill is rather slender, much compressed, its upper outline very little decurved, the angle of the lower much farther from the base than in the Common Guillemot, its dorsal line straight. There are thirty-five scutella on the middle toe, as in *U. Troile*, but the webs are full, their margins being straight. The wings are remarkably short.

Length 15 inches; wing from flexure $7\frac{2}{12}$; tail $1\frac{1}{4}$; bill along the ridge $1\frac{5}{12}$; along the edge of lower mandible $2\frac{3}{12}$; its height at the angle $\frac{5}{12}$; tarsus $1\frac{1}{4}$; middle toe $1\frac{9}{12}$, its claw $\frac{5}{12}$.

Another specimen, having the bill a little longer, more attenuated toward the tip and of a darker colour, wants the white ring and line; but is in every other respect exactly similar, the tint of the grey colour on the upper parts being only paler. It is impossible to imagine that the two are not of one and the same species.

Length 16 inches; wing from flexure $7\frac{2}{12}$; tail $1\frac{1}{4}$; bill along the ridge $1\frac{8}{12}$; along the edge of lower mandible $2\frac{5}{12}$; its height at the angle $\frac{5}{12}$; tarsus $1\frac{5}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{6}{12}$.

URIA GRYLLE. THE BLACK GUILLEMOT.

GREENLAND DOVE. DOVEKY. SEA TURTLE. LITTLE GUILLEMOT. SPOTTED GUILLEMOT. PUFFINET. TYSTIE, or TYSTEY. GEARA-BREAC.

Colymbus Grylle. Linn. Syst. Nat. I. 200.

Uria Grylle. Lath. Ind. Ornith. II. 797.

Black Guillemot. Mont. Ornith. Dict. and Suppl.

Guillemot a miroir blanc. Uria Grylle. Temm. Man. d'Ornith. II. 925.

Black Guillemot. Uria Grylle. Selby, Illustr. II. 426.

Uria Grylle. Black Guillemot. Jenyns, Brit. Vert. Anim. 258.

Uria Grylle. Bonap. Comp. List, 65.

Adult in winter with the bill black, the feet orange-red; the prevailing colour of the plumage white; the cheeks, neck all round, lower parts, and rump being of that hue; the upper part of the head mottled with greyish-black; the feathers of the back and the scapulars black, tipped with greyish-white; the wings and tail brownish-black, the former with a large white patch. Adult in summer with the bill black, the feet coral-red; the plumage entirely black, excepting a patch on the wing, the lower wing-coverts, and axillars, which are white. Young with the bill dusky, the feet brown; the plumage as in the adult in winter, but more mottled with blackish-grey.

THE Black Guillemot, which is much inferior in size to either of the two species already described, differs from them in having the body proportionally shorter and fuller, and is easily known by its red feet and the white patch on its wings. Its winter plumage is very differently coloured from that of summer, as will be seen from the following descriptions:—

MALE IN WINTER.—The body is elliptical, full, depressed; the neck rather short; the head oblong, narrowed

before, and of moderate size. The bill is shorter than the head, straight, rather slender, tapering, compressed, acute; the upper mandible with the dorsal line declinate and straight, at the end slightly decurve; the nasal sinus moderate, feathered, the sides convex beyond it, the edges sharp and slightly inflexed, with a sinus near the tip, which is deflected, narrow, blunted, with a semicircular edge; the lower mandible with the angle long and narrow, the dorsal line ascending and straight, the sides nearly erect and slightly convex, the edges sharp and inflexed, the tip acute; the gape-line straight.

The palate is flat, with two papillate ridges and two lateral series of papillæ; its anterior part concave, with five prominent lines. The tongue is an inch and nine-twelfths long, tapering, slender, trigonal, channelled toward the end, pointed with a thin edge. The œsophagus, six inches and three-fourths long, is three-fourths of an inch in width, and within the thorax dilates into a very wide sac, two inches long, and an inch and four-twelfths in breadth; its walls thin; the proventricular glandules forming a belt an inch and a quarter in breadth. The stomach is rather large, roundish, an inch and a half in length, an inch and a quarter in breadth, with a moderately thick muscular coat, and dense, plicate epithelium. The intestine is three feet long, from four-twelfths to three-twelfths in width; the cœca an inch and a third in length, three-twelfths in width; the rectum two inches and a quarter long, with an elliptical cloaca.

The nostrils are sub-basal, linear, three-twelfths long, in the lower part of the membrane, which forms a thin flap above, and partially concealed by the feathers; the eyes small; the aperture of the ear very small. The feet, placed far behind, are very small; the tibia feathered almost to the joint; the tarsus short, compressed, reticulate, but with an anterior inner series of larger scales. The toes, three in number, are rather small, scutellate, the lateral marginate; the inner with about twenty scutella, the next with twenty-eight, the outer longest, not including the claws, and with about thirty scutella; the membranes full. The claws are

rather small, arched, compressed, rather acute ; that of the middle toe with the inner edge dilated, and notched near the end.

The plumage is dense, soft, blended, and velvety ; the feathers oblong, on the back rather abruptly terminated. The wings are small and narrow, with twenty-eight quills ; the primaries curved and rather acute, the first longest ; the secondaries incurved, broadly rounded, the inner rounded. The tail is very short, narrow, rounded, of twelve soft, rather pointed feathers.

The bill is black ; the inside of the mouth vermilion ; the iris dusky ; the feet vermilion ; the claws bluish-black. The general colour of the plumage is white, with a tinge of grey. The upper part of the head is obscurely mottled with greyish-black ; the feathers of the back and the scapulars black, tipped with greyish-white ; the wings and tail brownish-black, the former with a large patch of white, including the secondary coverts and many of the smaller coverts.

Length to end of tail 13 inches ; extent of wings 22 ; wing from flexure $6\frac{8}{12}$; tail 2 ; bill along the ridge $1\frac{4}{12}$, along the edge of lower mandible $1\frac{10}{12}$; tarsus $1\frac{2}{12}$; inner toe $\frac{1}{12}$; its claw $\frac{5}{12}$; middle toe $1\frac{5}{12}$, its claw $\frac{5}{12}$; outer toe $1\frac{5}{12}$, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female differs from the male only in being a little smaller.

Length to end of tail $11\frac{1}{2}$ inches ; extent of wings 21.

CHANGES OF PLUMAGE.—The moult takes place in autumn, and is completed by the beginning of November. Early in spring another moult commences, which is completed by the end of April, and changes all the feathers, excepting those of the wings and tail. In summer the bird has a very different appearance, being chiefly of a black colour, glossed with green above, and tinged with brown or red below.

MALE IN SUMMER.—The bill, iris, and feet as in winter ;

but the latter are of a richer and deeper tint, like that of red coral, or carmine and vermilion. The general colour of the plumage is black, on the back and wings tinged with green, on the breast and abdomen with brown. On the wing is a conspicuous patch of white, including the secondary coverts and many of the smaller ; and the axillar feathers and lower wing-coverts are also white.

FEMALE IN SUMMER.—Like the male.

HABITS.—This, I think, is one of the most beautiful of our sea-birds. The lively little creature I have always found to be a kind of favourite in the places frequented by it. Many hundreds of the young have their lives every year sacrificed to the mistaken kindness of children who try to rear them, always without success. I have kept them alive for several weeks, but somehow they never thrived, and I never saw one that attained the age of three months.

Now, suppose yourself floating on the heavy swell of the Atlantic along the base of a cliff decorated with luxuriant tufts of *Rhodiola rosea*, *Silene maritima*, and *Statice armeria*, and inhabited by Guillemots, Auks, and Starlings. Here and there are narrow cracks, perpendicular and inclined. In most of them, after a shot has been fired, you will see one, two, or more, of the Black Guillemots looking down upon you, half afraid to remain, and loth to leave their eggs or young. Another shot is fired, and you see them bounce away on rapidly-moving wings. There, on a shelf, a dozen of them have alighted in a row. Their black plumage, enlivened by the two white wing-spots, and their singular-looking red feet, contrast with the brown rock. You may approach and shoot the half of them if you will, for they are by no means shy. Such are their usual breeding-places ; for they never, like the Auks and other Guillemots, deposit their eggs on the exposed ledges of the cliffs. They differ from them also in laying two or three eggs. I have never, however, obtained them from such places, although I know those who, clinging to the face of the rifted crag, have done so, foolishly, I thought, and at the peril of life ; but I have many times taken them from

under the large blocks of stone near high-water mark. Nests they have none, unless a little gravel or some pebbles may be so called. The eggs, frequently three, but I think more commonly two, are about the same size and shape as those of a domestic fowl, being regularly ovate, from two inches and a half to two inches and a quarter in length, from an inch and seven-twelfths to a twelfth less in breadth, sometimes smooth, often rough with little flattened prominences; greyish-white, yellowish-white, bluish-white, or sometimes pale greenish-blue, and marked with blotches, spots, and dots of dark brown, varying in tint from brownish-black to umber, together with faint purplish-grey spots, the markings larger and more numerous near the broader end. The eggs are deposited in the beginning of June, and early in August the young are abroad.

Their food consists of small fishes and crustacea, in search of which they frequent less the sounds and bays than the open sea. On all the coasts of Scotland, the fry of the Coal-fish is a very common article of food with them, as with many other sea-birds. About most of their breeding-places, I have not observed them to proceed daily to a great distance; but on leaving the rocks with their young they disperse over the ocean, entirely deserting their breeding-places until the next spring. Yet they do not migrate far southward with us, most of them remaining all winter in the north.

This species sits lightly on the water, on which it paddles about in a very lively manner. It dives with rapidity, like a shot as it were, opening its wings a little, and under water actually flies, as I have often seen. If shot at on the water, it will often dive, but also frequently rise on wing, and in so doing it strikes the water with its wings and feet for some distance. Its flight is quick, direct, performed by a perpetual rapid beating of the wings. In proceeding to a distance, they often fly, in small strings, low over the water, now inclining a little to one side then to the other. When their nests or roosting-places are high on the rocks, they gradually curve upward as they approach them, and alight abruptly. On the ground they move little about, although on occasion they walk moderately well, and prettily, with short steps.

and nearly erect. They repose either standing or lying flat on the rock.

The eggs, when hard boiled, are remarkably good ; but the flesh of the bird, being dark-coloured and rank, is not agreeable, although better than that of the Auk or other Guillemots. These are the principal facts which I have observed with regard to this bird, and with all of them I was well acquainted more than thirty years ago, when nature, without books, was my teacher. It may be amusing now to see what other writers have said on the subject.

Martin, in his *Voyage to St. Kilda*, writes thus :—"The *Scraber*, so called in St. Kilda ; in the *Farn Islands*, *Puffinet* ; in *Holland*, the *Greenland Dove* ; its bill small, sharp-pointed, a little crooked at the end, and prominent ; it is as large as a Pigeon, its whole body being black, except a white spot on each wing ; his egg grey, sharp at one end, blunt at the other. It comes in the month of *March*, and in the night-time, without regard to any winds ; it is always invisible, except in the night, being all day either abroad at fishing or all the day under ground upon its nest, which it digs very far under ground, from whence it never comes in daylight ; it picks its food out of the live whale, with which, they say, it uses sorrel, and both are found in its nest. The young *Puffin* is fat as the young *Fulmar*, and goes away in *August* if its first egg be spar'd."

Now, Mr. Martin has committed the grievous error of confounding two very different birds. That called *Scraber* in St. Kilda is *Procellaria Puffinus*, not *Uria Grylle*, which is named *Geara breac* all over the Hebrides. His description, then, applies to the latter bird, but all the habits which he has attributed to it belong to the Petrel or Puffinet. This is all very obvious, and there is no need of saying a word more on the subject ; but we may anticipate the continuation of these errors among the compilers.

Montagu, not a compiler, gives a remarkably poor account of this bird, and repeats the errors of its being named *Scraber* and having one egg, which he, however, describes as "dirty white, blotched with pale rust colour," and in this comes near the truth.

Dr. Fleming, who, following Cuvier, as he thinks, but erroneously, refers it to a separate genus, *Cephus*, because its upper mandible, instead of a notch, has only a sinus, gives to this genus the English name Scraber, thus continuing Martin's blunder. He also makes the egg solitary, but says it is "white, with black and grey spots."

Mr. Selby, following M. Temminck, rectifies Dr. Fleming's mistake as to the genus, but continues Scraber among the provincial names, and repeats the error of its having one egg. Mr. Jenyns gives an accurate description, chiefly translated from Temminck, but keeps to the one egg, although in a note he states that a writer in Loudon's Magazine often found two. Mr. Audubon finds two or three.

My reference to these authors does not suggest anything to add to what I have already stated, unless the distribution of this species, which in Britain has all its breeding-places to the north of the Tweed and Solway. The most southern localities with which I am acquainted are the Bass Rock and the Isle of May, at the mouth of the Firth of Forth. In the north of Scotland, it is extremely abundant in favourable situations. Mr. Low says that in Orkney it continues the whole year in the sounds, fishing in all kinds of weather. Dr. Edmondston, in a short account of the Birds of Shetland, with which he has favoured me, says it "lays two, sometimes three eggs, in rocky crevices, not far above the water, and generally has two young. The old birds change in winter to grey and black speckled. The young are of a more uniform and paler grey. The legs of the former are red, those of the latter black." It is quite unnecessary to consult more writers on the subject of its distribution in Britain. It has been stated to occur in all the northern seas of Europe, on the coasts of the Baltic, Norway, Feroe, Iceland, Greenland, Labrador, and in winter as far south as Maryland.

YOUNG.—The young at first have the bill dusky, the feet brown, the skin covered with soft down of a blackish-brown colour. When fledged, they have the bill black, the feet of a dingy or blackish-red, the inside of the mouth dusky-red. The cheeks, throat, and all the lower parts, are greyish-white,

mottled with blackish-grey, the tip of each feather being of the latter tint. The upper part of the head is dusky, the back dull black, some of the scapulars white, tipped with blackish-grey. The wings are greyish-black, with a white patch, of which the feathers are tipped with blackish-grey: the tail-feathers black.

PROGRESS TOWARD MATURITY.—The young moult in October, and when the winter plumage is complete, it differs little from that of the adult. In spring the young assume the summer dress of their parents, and can hardly be distinguished from them. Individuals obtained at different periods of the year present great diversity of markings, according to the state of change.

MERGULUS. ROTCHE.

THE only species yet known of this genus, although very intimately allied to the Auks and Guillemots, cannot with propriety be referred to either of these genera, on account of the peculiar form of its bill, which is shorter and thicker, or more convex, than that of either. The body is full and compact; the neck short and thick; the head oblong, anteriorly compressed.

Bill very short, stout, a little decurved, as broad as high at the base, moderately compressed toward the end; upper mandible with the nasal sinus basal, broad, and angular; the dorsal line convex and declinate; the ridge convex; the sides convex at the base, sloping toward the end; the edges sharp and overlapping, arcuate, with a slight sinus close to the small, narrow, bluntish tip; lower mandible with the intercrural space long, wide, and feathered; the dorsal line short, ascending, nearly straight; the sides sloping a little outwards, the edges sharp, the tip obtuse.

Mouth of moderate width; anterior palate flat, and covered with numerous horny reversed papillæ. Tongue large, fleshy, emarginate at the base, flat above, rather obtuse. Œsophagus of moderate width; proventriculus broader; stomach oblong, muscular, with large tendons, and dense, rugous epithelium; intestine short and narrow; cæca small; cloaca large and globular.

Nostrils basal, oblong, with a horny operculum. Eyes small. Aperture of ear very small. Legs very short, rather slender, placed far behind; tibia bare for a very short space; tarsus compressed, anteriorly covered with oblique scutella; no hind toe; anterior toes webbed, the inner much shorter

than the outer, which is about equal to the third. Claws moderate, arcuate, compressed, acute.

Plumage dense, blended ; feathers oblong. Wings small, narrow, convex, pointed ; primary quills tapering, the first longest, the rest rapidly graduated ; secondaries very short, rounded. Tail very short, slightly rounded, of twelve feathers.

The habits of the only species are similar to those of the Auks and Guillemots.

MERGULUS ALLE. THE LITTLE ROTCHE.

LITTLE AUK. LITTLE GUILLEMOT. SEA-DOVE.

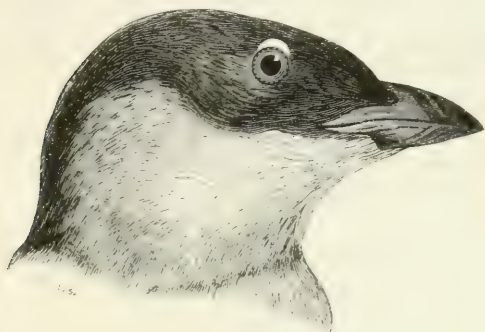


FIG. 82.

Alca Alle. Linn. Syst. Nat. I. 211.

Alca Alle. Lath. Ind. Ornith. II. 795.

Little Auk. Mont. Ornith. Diet. and Suppl.

Guillemot nain. Uria Alle. Temm. Man. d'Ornith. II. 928.

Common Rotche. Mergulus melanoleucos. Selby, Illust. II. 430.

Mergulus Alle. Common Rotche. Jen. Brit. Vert. Anim. 259.

Mergulus Alle. Bonap. Comp. List, 65.

Adult in winter with the upper part of the head, a portion of the cheeks, the hind part and sides of the neck, and all the upper parts of the body, black; the tips of the secondary quills, and the margins of some of the scapulars, white; as are the throat, fore-neck, breast, and abdomen; the uppermost feathers of the sides with their inner webs, black; the lower wing-coverts greyish-brown. In summer the colours similar; but the throat and fore-neck brownish-black, like the head.

MALE IN WINTER.—This little bird, though neither elegant in form nor remarkable for beauty of colouring, merits at least the epithet pretty. Were it not necessary, in

order to please the fastidious, to assume an air of solemnity in describing the feathered race, I would call it quaint or funny. A thing so diminutive, so active, so plump, so much at its ease, and so at home, in the midst of the wide waters, cannot but excite a pleasant feeling allied to mirth in him who meets with it. Not much larger than a Quail, it is yet of a robust form, having the body full and compact, the neck short and stout, the bill about half the length of the head, and formed somewhat like that of a Grouse, but still manifestly bearing a resemblance to that of the Auks, and even having faint traces of grooves and ridges on both mandibles. But as all that has been stated in the generic character applies to it, a specific description would be superfluous. There are, however, eighteen distinct, very broad, and very short scutella on the tarsus; thirty-two on the middle toe, thirty-three on the outer, and twenty-four on the inner. The digestive organs, also, may be more particularly described.

The palate is flat, broad, and covered with numerous short, horny, reversed papillæ. The tongue large, fleshy, ten-twelfths of an inch long, emarginate at the base, flat above, obtusely pointed, horny beneath. The œsophagus is three inches and ten-twelfths long, of moderate width; the proventricular glandules cylindrical, very numerous, forming a belt half an inch in breadth. The stomach is oblong, eleven-twelfths in length, eight-twelfths in breadth, with its muscular coat moderately thick, and forming two pretty distinct lateral muscles, with large tendons; the epithelium dense, thick, with numerous longitudinal and transverse rugæ. The intestine is sixteen inches and a half in length, two-twelfths and a quarter in width; the cœca four-twelfths and a quarter long, half a twelfth in diameter; the rectum an inch and a quarter, three-twelfths in width at the commencement, gradually enlarging into a globular cloaca, nine-twelfths in breadth.

The nostrils are very small, oblong, with a strong, angular, horny operculum. The eyes small, their aperture measuring a twelfth and a half. That of the ear one-twelfth.

The plumage is dense, blended, soft, on the upper parts glossy. The wings are short, narrow, convex, and pointed, with the first quill longest, the second scarcely a twelfth shorter, the other primaries rapidly decreasing, the secondaries short and rounded. The tail is very small, nearly even, the lateral feathers being only a twelfth and a half shorter than the medial.

The bill is black. The iris deep brown. The feet dusky. The throat, lower part of the cheeks, the breast, and abdomen are white. The upper part of the head, including part of the cheeks, the hind-neck, and all the upper parts, are black; the back glossed with greenish. There is a white spot on the upper eyelid. The scapulars are streaked with white, and the secondary quills are tipped with the same. The uppermost feathers on the sides under the wings have their inner webs black, and the lower wing-coverts are greyish-brown.

Length to end of tail $9\frac{1}{4}$ inches; extent of wings $14\frac{1}{2}$; wing from flexure $4\frac{1}{2}$; tail $1\frac{1}{2}$; bill along the ridge $\frac{8}{12}$, along the edge of lower mandible 1; tarsus $\frac{9}{12}$; inner toe $\frac{8}{12}$, its claw $\frac{4}{12}$; middle toe 1, its claw $\frac{3}{12}$; outer toe $\frac{1}{12}$, its claw $\frac{2}{12}$.

FEMALE IN WINTER.—The female is similar to the male, but smaller.

MALE IN SUMMER.—The bill, iris, and feet as in winter. The whole head and the neck all round are brownish-black; the upper parts glossy greenish-black; the lower white. There is a white spot on the upper eyelid, and the scapulars and tips of the secondary quills are white. In short, the colours are the same as in winter; but the head is tinged with brown, and the throat and fore-neck are black in place of being white.

HABITS.—The habits of this bird have not been minutely described. In summer it is found in very high latitudes, and in winter retires southward, along the coasts of both continents. It is said to be more abundant in the seas of

America than in those of Europe. Its food consists of small crustacea and fishes, which it procures by diving, its habits being similar to those of the Auks and Guillemots. Some writers say that it lays two eggs, others that it has one only. My acquaintance with it in the living state is extremely slight, as I have had only a single opportunity of seeing it, having observed two individuals perched on the cliffs of the Bass Rock, one day in the month of May. I have been credibly informed of its breeding in considerable numbers at St. Abb's Head. The egg, according to Mr. Audubon, "measures one inch and nearly five-eighths in length, one inch and an eighth in its greatest breadth. It is remarkably large for the size of the bird, and of a dull uniform pale greenish-blue."

On their arrival from the far north, these birds are seen occasionally in considerable numbers among the Shetland and Orkney Islands. Dr. Edmondston, however, in his Notes, calls it a rare winter visitant in Shetland; while, in Orkney, Messrs. Baikie and Heddle inform us that they "occasionally appear in great numbers during winter. They were very abundant in 1803, in January 1812, and again during winter 1846-7. They usually keep to deep water, and approach the shore only during bad weather. One season they were frequently observed swimming on fresh-water lochs." They are seen occasionally along the east coast of the middle division of Scotland, especially in the Bays of Banff, Peterhead, and Aberdeen. In November 1846, an individual, caught near the mouth of the harbour at Aberdeen, was brought to me by Mr. Alexander Chalmers; another found dead near Don Mouth I saw with Mr. Thomas M'Kenzie; a third was sent to me from Roseheart, by Dr. Wisely, who stated that they come sometimes to the coast there in very severe storms in winter. Great numbers were seen that winter along the eastern coast of Aberdeenshire. Mr. Yarrell gives an account of the occurrence of these birds in October 1841, after a violent storm from the N.N.E., on the eastern coasts of England, from Yorkshire to Kent and Sussex; and mentions various instances of their having been driven far inland.

UTAMANIA. RAZOR-BILL.

THE Razor-bills differ from the Guillemots chiefly in the dilated form of their bill, and in having the tail cuneate. Their proportions otherwise are the same.

Bill rather shorter than the head, stout, very high or vertically expanded, but much compressed; upper mandible with the nasal sinus broad and feathered, the dorsal line arcuate and decurved, the ridge extremely narrow, the sides erect and transversely grooved, the edges sharp and inflected, with very slight notches close to the small decurved tip; lower mandible with the angle long, and a small horny appendage in it, the dorsal line ascending and toward the end concave, the edges sharp and inflected, decurved and direct at the end.

Mouth of moderate width; anterior palate flat, with five prominent lines. Tongue slender, trigonal, tapering, pointed; œsophagus wide, excessively dilated in the lower part; stomach small, elliptical, with the muscular coat rather thin, with round tendinous spaces; the epithelium thin, dense, longitudinally plicate; intestine of moderate length and width, with small cœca.

In other respects they resemble the Guillemots, and their habits are the same as theirs.

UTAMANIA TORDA. THE COMMON RAZOR-BILL.

RAZOR-BILL. COMMON AUK. GURFEL. FALC. MURRE. MARROT.

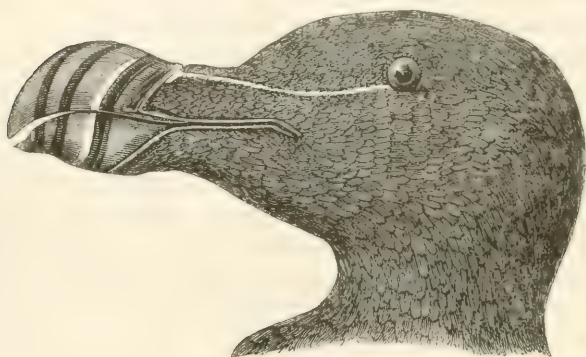


FIG. 83.

Alca Torda. Linn. Syst. Nat. I. 210. Summer.

Alca Torda. Lath. Ind. Ornith. II. 793.

Razor-bill. Mont. Ornith. Dict. Adult in summer.

Auk, Black-billed. Mont. Ornith. Dict. and Suppl. Young in winter.

Alca Pica. Linn. Syst. Nat. I. 210. Winter.

Pingouin macroptère. Alca Torda. Temm. Man. d'Ornith. II. 936.

Razor-bill Auk. Alca Torda. Selby, Illustr. II. 435.

Utamania Torda. Bonap. Comp. List. 66.

Length about seventeen inches ; wings reaching to the middle of the tail, which has twelve feathers ; bill with four transverse grooves, one of which is white. Adult in summer with the head and upper part of the neck all round brownish-black, the upper parts greenish-black, the lower white ; a narrow line from the bill to the eye, and the terminal margins of the secondary quills white. Adult in winter with the upper parts of the head and nape greyish-black ; the throat and sides of the head white, with a dusky band behind the eye ;

the other parts nearly as in summer. Young at first coloured like the adult in summer, afterwards like the adult in winter, but always distinguishable by having the bill smaller, much less elevated, without grooves, and black.

MALE IN WINTER.—The Razor-billed Auk, which closely resembles the Slender-billed Guillemot in form and colour, is somewhat less than that species, and distinguished from it by its much deeper compressed bill, somewhat resembling the blade of a knife. The body is rather elongated, full, and somewhat depressed; the neck short and thick; the head large, ovato-oblong, anteriorly narrowed. The bill is shorter than the head, very high, much compressed; the upper mandible with its lateral or nasal sinuses extremely large, extending to more than half its length, leaving only a narrow margin below, forming an angle before, and covered with feathers, its upper margin oblique, forming a narrow ridge, the outline of the horny part arcuato-decurvate in the third of a circle, the ridge very narrow but convex, the sides nearly flat and erect, with five transverse curved grooves, of which that next the basal rim is deepest, the edges inflected and sharp, the tip decurved and narrow, but blunt; the lower mandible with the intercrural space long and very narrow, the crura for half their length covered with feathers, leaving only a very narrow horny margin, but ultimately enlarged, the dorsal line ascending and slightly concave, the sides nearly flat, with four transverse shallow grooves, the edges sharp and inflected, the tip somewhat decurved, the gape-line straight, at the end decurved.

The mouth is of moderate width, opening far before the eyes; the palate with two papillate ridges, and several series of reversed papillæ; its anterior part with five prominent lines. The tongue, an inch and a quarter in length, is slender, fleshy, flat above, with a medial groove, and tapers to a thin horny point. The œsophagus, eight inches long, is about an inch in width, but on entering the thorax enlarges to an inch and three fourths, forming an enormous proventricular sac, the greater part of which is occupied by the very numerous glandules. The stomach is small, elliptical, ten-

twelfths long, eight-twelfths in breadth, its muscular coat rather thin, the tendons round, the epithelium thin, dense, and longitudinally plicate. The pylorus is very small; the intestine four feet two inches long, from five-twelfths to two-twelfths in width; the cœca eight-twelfths long, a twelfth and a half in breadth; the rectum two inches, with a globular cloaca, an inch in diameter.

The nostrils linear-oblong, marginal, medial, two-twelfths and a half long. The eyes small, and the aperture of the ears more so. The feet, which are placed far behind, are short, and rather strong; the tibia bare for a short space; the tarsus very short, compressed, anteriorly edged, posteriorly rounded, with about twenty small anterior scutella, on the sides and behind reticularly scaly. The hind toe is wanting, the anterior toes of moderate length, the inner shortest, the middle toe slightly longer than the outer, their scutella thirty-two, forty, and forty-two; the interdigital membranes full. The claws rather small, arcuate, compressed, pointed, that of the middle toe with the inner margin enlarged.

The plumage is dense, blended, glossy, very soft; on the head very short, close, and velvety. The wings are rather short, very narrow, concave, pointed, with eighteen quills; the first primary longest, the second scarcely shorter, the rest rapidly decreasing; the primaries narrow, acute; the secondaries broader, curved downwards and inwards, and obliquely rounded; the tertiaries short, straight, and rounded. The tail short, narrow, cuneate, of twelve tapering feathers, of which the medial are an inch longer than the lateral.

The bill is bluish-black, with a white band crossing each mandible; the basal margins and the inside of the mouth yellow. The feet black. The upper part of the head, the hind part and sides of the neck, and all the upper part of the body and wings, black, with a tinge of green. From the base of the ridge of the upper mandible to the eye on each side is a narrow line of minute white feathers, tipped with dusky. The secondary quills are terminally margined with white, and the primaries have their inner webs shaded into light brownish-grey. The throat, sides of the head, and upper neck, fore part of the neck, and the rest of the lower parts,

white. Behind the eye is a narrow blackish-grey band, and the sides of the neck, nearly half way down, are mottled with the same.

Length to end of tail $17\frac{1}{2}$ inches; extent of wings 28; wing from flexure $8\frac{2}{12}$; tail $3\frac{9}{12}$; bill along the ridge $1\frac{7}{12}$; along the edge of lower mandible $2\frac{2}{12}$; its greatest height $\frac{1}{12}$; tarsus $1\frac{1}{4}$; inner toe $1\frac{2}{12}$, its claw $\frac{5}{12}$; middle toe $1\frac{8}{12}$, its claw $\frac{5}{12}$; outer toe $1\frac{7}{12}$, its claw $\frac{4}{12}$.

FEMALE.—The female differs from the male only in being somewhat less.

Length to end of tail $16\frac{1}{2}$ inches; extent of wings 27.

CHANGE OF PLUMAGE.—In adult birds the quills, tail-feathers, and apparently those of the body, are changed in autumn, from August to the middle of October, there being at that season a complete moult, during part of which the birds are often found unable to fly. In spring the plumage of the head and neck is changed, the new feathers being differently coloured. As the summer advances, the black plumage gradually fades to brown, often in a very remarkable degree, the primary quills and coverts at length becoming brownish-grey. By this time the quills and tail-feathers have become ragged.

MALE IN SUMMER.—A partial change of the plumage having been effected in spring, the bird differs considerably in its summer dress. The colours of the bill and feet remain as before, but the inside of the mouth is of a brighter yellow, the basal margins of the bill orange. The head, and upper part of the neck all round are black; the throat and cheeks tinged with purplish-red; the narrow bands from the bill to the eyes pure white and conspicuous. The rest of the plumage coloured as in winter, but the wings tinged with brown, and gradually becoming more so as the season advances.

FEMALE IN SUMMER.—The female cannot be distinguished from the male.

HABITS.—In autumn great numbers of Razor-bills make their appearance on the bays and estuaries of most parts of Scotland and England. As the season advances they become more numerous to the southward, and in winter the northern coasts are almost entirely deserted by them. In the firths and other inlets, when frequented by shoals of young herrings or other fishes, they are often seen in great abundance, and in fine weather are occasionally met with in the open seas. Toward the end of spring they collect into parties, and proceed toward certain breeding-places, which are always abrupt cliffs along the shores, or precipitous islands, where they nestle along with the Guillemots and Kittiwakes. Of this kind are St. Abb's Head in Berwickshire, the Bass Rock, and Fowlsheugh near Stonehaven. The Hebrides afford many such retreats, one of the most interesting of which is the little island of Berneray, called by mariners Barray Head, about ninety miles distant from the coast of Ireland on the one hand, and St. Kilda on the other, and one of a group of islets named the South Isles of Barray. In the summer of 1818, I accompanied Mr. Macneil of Vetersay, and Mr. Nicolson, the minister of Barray, to these islands. Soon after landing, we betook ourselves to a hut, which had been cleared for our reception, and regaled ourselves with roasted mutton, wild fowls' eggs, and whisky. As our boat was rather large and heavy, it was substituted by a smaller one belonging to the people of the island. Rowing round its eastern extremity, we came upon some high cliffs, covered with Guillemots, of which about forty were killed, together with a few Gulls. Passing round the island, we returned to our lodging, and in the evening I accompanied Mr. Nicolson to the summit of a ridge, on which were the remains of a rude fort, and where we had a fine view of the islands. Patches of white vapour floated on the surface of the ocean, and the summit of the cliffs were enveloped in mist. The weather had been so sultry for many weeks, that where the soil lay thin on the rocks, the herbage was scorched, the brooks, and even the fountains, were dried up, and in this usually cold and wet climate we experienced many of the disagreeable effects of a warmer region, without any of its advantages. But the

islanders cheered themselves with the hope of a speedy fall of rain, the sea having been unusually disturbed, although the weather had been calm, and this phenomenon, they said, invariably indicated a change.

The Island of Berneray is of an elliptical form, about a mile in length, and upwards of half a mile in breadth. It presents the appearance of a mass of rock, considerably inclined, the northern side dipping into the water, and the southern exhibiting an abrupt section rising to the height of several hundred feet. On a kind of peninsula, jutting out from the face of this precipice, is the rude fort mentioned above, in the form of a double wall laid across the isthmus, and roofed with long slabs. Viewed from the sea, the rocks present an imposing spectacle, exhibiting masses of inclined, perpendicular, and projecting cliffs, smooth, largely cleft, or minutely fissured. The whole face of the precipice, to the extent of half a mile, was covered with birds which had assembled there for the purpose of breeding. Only four species were seen by me: the Guillemot, the Auk, the Puffin, and the Kittiwake. These birds inhabit the cliffs, not promiscuously, but with a degree of regularity and distinction which seems not a little wonderful. On the grassy summits breed the Puffins, burrowing in the turf. From thence to half way down is the space selected by the Auks, while in the remaining division are stationed the Guillemots and Kittiwakes, the latter coming almost to high-water mark. The Auks and Guillemots lay each a single egg, which is placed on the bare rock. On a shelf about three yards in length, and as many feet in breadth, one may often see fifty or sixty crowded into a solid mass, and each sitting on its own egg. Such masses are of frequent occurrence, the shelves being larger or smaller; but in general two, or three, or four are seen together, and sometimes an individual is seen sitting solitarily, if one may say so, when it is surrounded by others at no greater distance than three or four feet at farthest. The Gull, on the other hand, forms a nest of grass and seaweeds, and lays two or three eggs. This, I believe, is the most numerous species, and in many places covered the face of the rocks; but, in truth, the number of all the species

excited astonishment. When a shot was fired, most of the birds in the neighbourhood left their nests and flew about, while some, in their hurry, fell into the sea, and, on emerging, raised with their wings an uninterrupted splashing of the water some hundred yards from the base of the rocks. After a succession of shots, almost the whole body seemed to be on wing, presenting the appearance of a kind of cloud, which occupied a quarter of a mile square, and through which one could scarcely distinguish the blue sky from the flakes of white vapour. In their flight the birds did not cross much, but generally moved in the same direction, wheeling in a circle. This disposition probably arose from their number being so great that they could not conveniently fly at random. The mingling screams produce a general mass of harsh sound, in which the cries of individuals cannot be distinguished. The weather being very hot, and the light reflected from the rocks and the sea, while the steam from the rowers, shooters, and tar of the boat was sickening, I at length became affected with severe headache, which was increased by gazing on the birds as they sat far above us, and the frequent fulminations intended for their destruction.

The noise and bustle of these winged inhabitants of the rocky isle reminded me of the stir of some great city, and their prodigious numbers I could compare to nothing that I had seen but the shoals of some species of fish. Many were fishing on the smooth sea around the island, many flying from the rocks, many returning to their eggs, many resting on shelves and crags along the edge of the water ; but by far the greater number were seated on their eggs. Such was the appearance of the place when the birds were not disturbed ; and they were not very excitable, for, unless after a shot, none stirred on our account, however close the boat came. It was not uncommon to see them arranged in a line extending several yards along a fissure, and this formed a very pretty sight, especially when their white breasts appeared, for, excepting the Gulls, these birds stand nearly erect. The rocks seemed wonderfully adapted for the purpose of breeding, being very closely intersected by fissures of various sizes, and running in all directions.

Having left the landing-place about ten in the morning, we passed along the rocks westward, three of my companions shooting joyously as we proceeded. About fifty birds were killed, principally Guillemots, the Auks being for the most part, and the Puffins entirely out of reach, while the Kittiwakes, although nearest, not being in groups, were not molested. Some Puffins were procured by our guide, who went on shore for them. About twelve, the wind began to come in gusts, and the agitation of the sea increased, particularly at the western extremity of the island, where a strong current ran, producing a jumble of short waves. These circumstances prevented us from visiting several places said to be equally interesting, particularly an islet on which the Puffins breed in vast numbers, and induced us to return to our anchorage through the narrow channel between Berneray and Minglay. The predicted change of weather had commenced : some rain fell, and the wind blew freshly from the south. About two o'clock we set sail with a favourable breeze, and in an hour and three quarters performed the voyage, which, when outward bound, had taken us about four hours, the distance being ten miles.

This is one way of examining such places, and pleasant enough it is ; but there is a better. Let the observer, having discovered a crack in the rock affording a somewhat perilous descent, cautiously, with knees and elbows, unshod feet and grasping fingers, make his way into the midst of the birds. There they are around you. Collect yourself, breathe freely, deeply, hold on with feet and hands, take one comprehensive glance, but look not again to the deep-green sea beneath, lest you become giddy. Most of the birds that have been here have fled, leaving their large, oblong, blotched eggs on the bare rock. You wonder at their security, but touch one of them, and you will find that it rolls in a semicircle, or, if there be any asperities beneath, scarcely at all. The Auks that come in from the sea ascend curving toward you, with a quick direct flight, far from buoyant, however, and merely with force enough to clear the edge of the shelf. They alight abruptly and heavily, and stand nearly erect, with their whole tarsus on the rock. Those on their eggs are in a horizontal

position, and one must think it an uncomfortable one, from the size of the object of their care. If you shout, some, in their haste, may drive their eggs over the edge ; at all events, most of them will fly off. But your position is uneasy, and it is safer to ascend, taking with you as many eggs as you can carry, leaving the hands free.

It is pleasant, at a distance from their breeding-places, to see these birds flying over the sea in small troops, generally in single file, with a direct and rapid flight, beating their short wings without intermission, but frequently turning a little to either side, so as at one time to present the breast, at another the back to the spectator. In flying, the head, body, and tail are direct, the wings extended, and never brought close to the sides, but acting by alternate movements in a nearly vertical direction. In alighting they settle abruptly, but as they never alight from above, they sustain no injury from the slight shock. On the rocks, they have an awkward and hobbling motion, and can scarcely be said to be capable of walking. I have never seen them alight on a sandy beach, or on pasture-ground.

It is usually on the open sea, around their breeding-places, but often at the distance of many miles from them, that they search for their food, which consists chiefly of small fishes— young herrings, for example—and crustacea, which they procure by diving. In swimming, they keep the body nearly horizontal, the neck retracted, and, as they proceed, frequently immerse their head as if exploring the deep. In diving, they suddenly elevate the hind part of the body, spread out their wings a little, plunge with great force, and thus fly off, using their wings under water much in the same manner as when flying in the air. They can remain a considerable time under, and are often seen to rise at a great distance. In general, it is not difficult to approach them on the water, as they allow a boat to come within shooting distance ; but as they dive very suddenly, it is not always easy to shoot them. I have never heard them emit any other cry than a low croaking sound. If a wounded bird is seized, it is apt to bite severely, and to be with difficulty disengaged.

The flesh of this bird is very dark-coloured, and does not

afford agreeable eating ; but its egg, when hard boiled, is excellent, the albuminous part being tender, and of a bluish tint. The young birds are eaten in some places. The egg, I think, is invariably single, although sometimes one may see two or three that have accidentally come close together in a confined space. It is excessively large, of an oblong shape, somewhat pyriform, but more rounded at the small end than that of the Guillemot, its average length three inches, or rather less, its greatest breadth two inches. The ground colour is white, greyish-white, or brownish-white, largely blotched or clouded, and spotted and sprinkled with deep brown or black, with spots of paler brown and light purplish-blue interspersed.

The eggs are laid in the beginning of May, and the young come out in about four weeks. They are at first covered with down, and they remain on the rocks until fully fledged. As the changes which they undergo have not been, in so far as I know, hitherto described, I shall give a particular account of them.

YOUNG.—During the first week the bill is black, with an oval white knob on the upper mandible, and the tips whitish ; the iris black ; the feet brownish-black tinged with green, the claws brownish-black. The covering is a short, dense, soft down. The head, neck, and lower parts, are pale grey or greyish-white ; the upper and lateral parts of the body dark grey, especially the hinder.

When about a fortnight old, the young bird has the bill small, extremely compressed, higher in proportion to its length than afterwards, bluish-black, with the tips horn-colour, the basal margins dull yellow, the knob gone ; the feet black, slightly tinged with green, the claws brownish-black. The covering is not down, properly so called, but a downy plumage, composed of regularly-formed, downy, oblong, very soft, weak feathers, with disunited downy filaments ; those on the head and neck extremely soft, on the lower parts a little firmer, and on the upper somewhat more so. There are regular primary and secondary quills, as well as tail-feathers, but all of looser texture than afterwards. The head,

throat, hind neck, and the rest of the upper parts, are brownish-black, the throat paler, with many whitish filaments. The white lines from the bill to the eye are distinct, but the secondary quills have no white at the end. The feathers at the lower part of the tibia are dusky.

Gradually, these first feathers are substituted by others of a firmer texture. Greenish-black quills, coverts, and tail-feathers sprout forth; the secondaries terminally margined with pure white. The other parts are then invested with the new feathers. The cheeks and throat now become white; so that in this stage the colouring resembles that of the adult in winter, whereas formerly it resembled that of the bird in summer. The bill gradually elongates, assumes a darker tint, and assumes some slight appearance of rugæ; and the feet also become darker.

On the head, neck, and lower parts, the feathers are again changed, and at length, by the end of September, the bird has acquired its full winter plumage. It is then as follows:—

YOUNG IN FIRST WINTER.—The bill is much smaller than in the adult, and in particular of much less height, and still without any decided appearance of grooves. It is of a uniform bluish-black colour, with the extreme tips horn-coloured, and the upper with distinct notches. The feet and claws are brownish-black. The upper part of the head, including the space from the eye to the bill, is greyish-black, as is the nape; all the upper parts black tinged with green, excepting the tips of the secondary quills, which are white. The throat, and lower parts in general, are white; but a dusky band runs along the crura of the lower mandible, a greyish-black streak passes from the cheek over the ear, the white of the side of the head extending beyond it, and the black of the hind neck on each side comes forward on the middle of the throat, becoming pointed and mottled, so as almost to meet that of the other side, and indicating the lower limit of the black in the summer plumage. The white lines from the bill to the eye are faint, the feathers being tipped with black.

PROGRESS TOWARD MATURITY.—Next spring the bird assumes the appearance of the adult in summer, but has the bill still smaller, although with two or three pretty distinct grooves. The white band on the middle groove is not generally assumed until the second spring.

REMARKS.—The history of this bird, as above detailed, is more nearly complete than that of many others. The young birds in their first winter were long taken for a distinct species, to which the names of *Alca Pica* and *Black-billed Auk* were given. But the reasonings on which this supposed species were based being incorrect, it is unnecessary to adduce them here.

This species, besides inhabiting the northern parts of Europe, and in winter appearing on the coasts of Britain, Holland, and France, occurs equally in North America, where in winter it extends as far southward as New York. Mr. Audubon found it breeding on the islands in the Gulf of St. Lawrence, and on the coast of Labrador. Other observers have met with it in Greenland, Iceland, Spitzbergen, and in general dispersed over the arctic seas.

ALCA. AUK.

THE genus *Alca* of Linnæus included the Razorbill, the Puffin, the Rotche, and the Great Auk, each of which has been made the type of a genus. The Great Auk and the Razorbill, however, are by many ornithologists of the present day considered as of one and the same genus. The greater length of the bill, its more numerous furrows, and the extremely small size of the wings, seem to distinguish the great Auk generically, and, as it is the most remarkable bird of the family, it has been selected as the type, and allowed to retain the Linnæan name. No other species of this genus is known.

Bill as long as the head, vertically expanded, exceedingly compressed ; upper mandible with its outline at first straight, then declinate and decurved to the end, the ridge very narrow, the sides nearly flat, with numerous oblique curved ridges and grooves, the edges sharp toward the end, the tip decurved and obtuse ; lower mandible with the angle long, the dorsal line at first convex, then ascending and concave to the end, the sides flat, grooved, the edges sharp, the tip deflected.

Nostrils linear, marginal. Eyes rather small. Apertures of ears very small. Feet short, very strong ; tarsus compressed, anteriorly scutellate ; hind toe wanting ; outer toe slightly shorter than the middle ; interdigital membranes entire ; claws rather small, arched, obtuse.

Plumage dense, blended, very soft. Wings extremely small, but perfectly formed ; first quill longest. Tail short, pointed.

ALCA IMPENNIS. THE GREAT AUK.

GAREFOWL. PENGUIN.

Alca impennis. Linn. Syst. Nat. I. 210.

Alca impennis. Lath. Ind. Ornith. II. 791.

Great Auk Mont. Ornith. Dict. and Suppl.

Pingouin brachiptere. *Alca impennis.* Temm. Man. d'Ornith. II. 939.

Alca impennis. Flem. Brit. Anim. I. 127.

Great Auk. *Alca impennis.* Selby, Illustr. Brit. Ornith. II. 433.

Alca impennis. Jenyns. Brit. Vert. Anim. 261.

Alca impennis. Bonap. Comp. List, 66.

Bill much compressed, sulcate; an oval white spot before each eye.

THIS bird has never come under my observation in the living state; nor have I seen more than two prepared specimens—one in the British Museum, the other belonging to Mr. Audubon, and procured by him in London. From this latter I have taken the following description:—

ADULT IN SUMMER.—The body is of a full and compact form; the neck short and thick; the head large, oblong, anteriorly narrowed. Bill longer than the head, stout, very high, extremely compressed. Upper mandible with the dorsal line straight at first, then declinato-decurvate to the end, the ridge very narrow, broader at the base; the sides nearly flat, with a basal marginal ridge, succeeded by a deep narrow groove, then a large flat space, followed by eight oblique curved ridges and grooves, the edges sharp and direct toward the end, the tip decurved, and rather obtuse. Lower mandible with the angle long, the sides for half their length extremely narrow and linear, beyond the angle broad,

that part being high and compressed ; the dorsal line at first convex, then ascending and concave to the end ; the sides flat, with twelve transverse grooves, fainter than those of the upper mandible ; the edges sharp, the tip deflected.

Nostrils basal, linear. Eyes rather small. Apertures of ears very small. Feet placed far back, short ; tarsus short, compressed, anteriorly scutellate, scaly on the sides. Hind toe wanting ; outer toe nearly as long as the third or middle, inner toe much shorter ; all with numerous scutella and several rows of angular scales, and connected by narrow reticulated membranes ; the inner and outer toes connected at the base, the middle toe only for a quarter of an inch. Claws rather small, narrow, arched, convex above, obtuse.

Plumage dense, blended, very short, on the head and neck short and velvety. Wings extremely small, but of the same form and structure as in the Razorbill and Guillemots ; the primaries narrow and tapering to an acute point, the first longest, the rest rapidly graduated, their coverts long ; secondaries short and broad, scarcely longer than their coverts. Tail short, pointed, of fourteen feathers.

Bill black, with the grooves white. Feet and claws black. The head, throat, sides, and hind part of the neck, and all the upper parts, black ; the throat and sides of the neck tinged with chocolate-brown ; the wings with greyish-brown ; the head, hind-neck, and back glossed with olive-green. A large oblong patch before each eye, the tips of the secondary quills, and all the lower parts, white.

Length to end of tail 25 inches ; wing from flexure 7 ; tail 3 ; bill along the ridge $3\frac{5}{12}$, along the edge of lower mandible $4\frac{1}{2}$, its depth at the angle $1\frac{7}{12}$; tarsus 2 ; middle toe $2\frac{8}{12}$, its claw $\frac{6}{12}$; outer toe $2\frac{8}{12}$, its claw $\frac{4}{12}$; inner toe $2\frac{1}{12}$, its claw $\frac{5}{12}$.

ADULT IN WINTER.—It appears to undergo, in autumn, the same change as the Guillemots and Razorbill, as Dr. Fleming states :—" In winter, the brownish-black of the throat and fore-neck is replaced by white, as I had an opportunity of observing in a living bird, brought from St. Kilda, in 1822."

HABITS.—This very remarkable bird is an inhabitant of the arctic seas, and in its habits resembles the Razorbill and Guillemots ; but its history has not been satisfactorily traced, and of its distribution we know only that it extends from the extreme north to the Orkney Islands and St. Kilda, a few, however, having been seen as far south as Devonshire and Waterford. It appears to be gradually diminishing in numbers, and is generally considered as a very scarce bird. It is certainly so as British, for not more than ten individuals are alluded to as having occurred in our seas. "One was seen off Fair Isle in June 1798. A pair bred in Papa Westra for several years." "The natives of the Orknies," says Montagu, "informed Mr. Bullock, in his late tour through those islands (in 1813), that one male only had made his appearance for a long time, which had regularly visited Papa Westra for several years. The female (which the natives called the Queen of the Auks) was killed just before Mr. Bullock's arrival. The King, or male, Mr. Bullock had the pleasure of chasing, for several hours, in a six-oared boat, but without being able to kill him ; for, though he frequently got near him, so expert was the bird in its natural element, that it appeared impossible to shoot him. The rapidity with which he pursued his course under water was almost incredible." Very soon after, however, the male bird was obtained and sent to Mr. Bullock, at the sale of whose collection it was purchased for the British Museum, where it is still to be seen. Dr. Fleming has given an account of one taken at St. Kilda, in 1822, but which made its escape. Another was obtained there in 1829, by Mr. Murdoch M'Lellan, and presented to the late Mr. Stephenson, who intended it for the Edinburgh Museum ; but it afterwards made its escape. One, said to have been taken in a pond of fresh water, two miles from the Thames, on the estate of Sir William Clayton, in Buckinghamshire, is also mentioned by Dr. Fleming, on the authority of Mr. Bullock. Another, on that of Sir W. J. Hooker, is noticed in the Catalogue of Norfolk and Suffolk Birds ; Dr. Edward Moore alludes to one found dead near Lundy Island, in 1829 ; and Mr. Thompson, of Belfast, mentions

an individual taken, in 1834, off the coast of Waterford, and preserved in Dr. Burkitt's collection.

It does not appear to have been met with of late years by any of our arctic voyagers, nor do any of the American writers profess to have seen it. Mr. Audubon states that Mr. Henry Havell, when on his passage from New York to England, hooked one on the banks of Newfoundland, and hauled it on board, but after several days restored it to freedom. He was informed that it breeds on a low rocky island to the south-east of Newfoundland, but had no opportunity of ascertaining the accuracy of the report. Various authors state that the egg is about five inches long, and nearly three in breadth; pyriform, like that of the Common Guillemot; yellowish-white, with numerous irregular lines and blotches of brownish-black.

MORMON. PUFFIN.

THE Puffins, of which several species are known, though only one of them belongs to our seas, are smaller than the Razorbills or Guillemots, which they resemble in form and structure, as well as in habits. They have the body ovate; the neck short and thick; the head large, roundish, anteriorly compressed.

Bill as long as the head, stout, vertically expanded, so as to occupy at the base the whole height of the face, much compressed, and obliquely furrowed on the sides; upper mandible with the dorsal line decurved, the ridge extremely narrow, the sides nearly flat and erect, the edges sharp, the tip small and deflected, the basal margin with a prominent dotted rim; lower mandible with the angle very narrow and perpendicular, the dorsal line ascending, more or less convex, the sides erect, the edges thin, the tip narrow and blunt.

Mouth of moderate width; anterior palate flat, with five prominent lines. Tongue slender, trigonal, pointed. Œsophagus wide, much enlarged below; stomach moderately muscular, with a dense plicate epithelium; intestine rather long and wide, with moderate cœca.

Nostrils basal, marginal, linear. Eyes rather small, generally with small horny plates on the eyelids. Aperture of ear very small. Legs very short, placed far behind; tibia with only a very small space bare; tarsus stout, not much compressed, anteriorly with small scutella; no hind toe; anterior toes webbed, the inner much shorter than the outer, which is nearly as long as the middle toe; claws of moderate length, arcuate, compressed, pointed, the inner uncinatè.

Plumage dense, blended, firm, but soft. Wings short, narrow, much curved, acute; tail very short, slightly rounded, of sixteen feathers.

They differ from the other birds of this family in digging holes in the turf, in rocky places, in which they nestle and rear their young. Their eggs are white, one only in each nest. The vertically expanded form and bright colouring of the bill render them easily distinguishable, and have procured for them the popular name of Sea-parrots.

MORMON ARCTICUS. THE ARCTIC PUFFIN.

PUFFIN. POPE. SEA PARROT. COULTERNEB. GULDER-HEAD.
TAMMY-NORRIE. BUIKIR. MULLET. BOTTLE-NOSE.

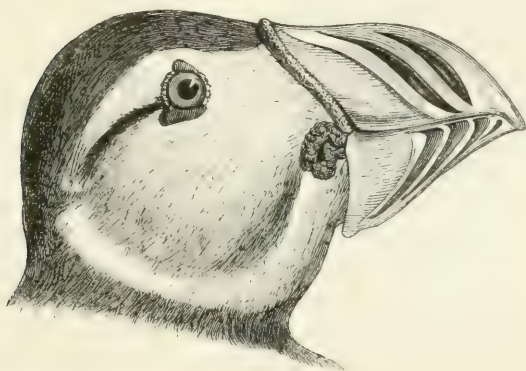


FIG. 84.

Alca arctica. Linn. Syst. Nat. I. 211.

Alca arctica. Lath. Ind. Ornith. II. 792.

Puffin. Mont. Ornith. Dict. and Suppl.

Fratercula arctica. Flem. Brit. Anim. 130.

Macaraux moine. Mormon *Fratercula.* Temm. Man. d'Ornith. II. 933.

Common Puffin. *Fratercula arctica.* Selby, Illustr. Brit. Ornith. II. 439.

Fratercula arctica. Jen. Brit. Vert. Anim. 260.

Mormon *arcticus.* Bonap. Comp. List, 66.

Bill with three curved furrows on each mandible toward the end ; the basal rim and first ridge on both dull yellow, the intervening space greyish-blue, the rest bright-red ; an oblique, pointed, horny appendage above, and an elongated narrow plate below the eye ; upper parts greyish-black ; lower white ; sides of the head greyish-white ; throat grey ; a band of brownish-grey on the neck.

MALE IN SUMMER.—Our common Puffin is of a very compact form, the body being ovate ; the neck short and very thick ; the head large and roundish ; the feet, wings, and tail, short.

The bill is about the length of the head, vertically expanded and compressed, so as when viewed laterally to present a nearly triangular form ; its base occupying the whole height of the face. Upper mandible having a prominent minutely punctate rim along its basal margin, its dorsal outline decurved from near the base, the ridge very narrow, but obtuse, the sides nearly erect, flattened, and having, besides the basal rim, three curved, oblique ridges, and three grooves, together with a flat sub-basal space, the edges nearly straight, sharp, the tip small and declinate. Lower mandible with the basal outline on each side inflexed beyond the perpendicular, the dorsal outline slightly convex for half its length, then straight, the sides erect, flat, with a large triangular space, and three narrow ridges, the edges direct and sharp, a little decurved at the tip. The gape-line straight, extending a little beyond the base of the mandibles, where its margins are formed by a corrugated extensile membrane.

Eye rather small, with a narrow, sub-triangular, horny body, directed upwards and backwards, on the upper, and an oblong, horizontal body on the lower eyelid. Nostrils linear, direct, four twelfths of an inch long, basal, marginal. Tibia bare for a small extent ; tarsus very short, little compressed, anteriorly with short scutella, excepting the upper third, the sides reticulated. Toes of moderate length, scutellate, connected by entire webs, the middle toe longest, the outer slightly, the inner much shorter. Claws of moderate length, strong, the inner hooked, the rest slightly arched.

Plumage dense, firm, soft, very short on the head. Wings short, narrow, incurvate, pointed ; the first quill slightly shorter than the second. Tail very short, slightly rounded, of sixteen soft, obtuse feathers.

The basal rim and first ridge of the upper mandible are dull yellow, the intervening triangular space greyish-blue ; the basal margin of the lower bright red ; the first ridge and the intervening space as in the upper ; the rest bright car-

mine-red ; the membranes at the base of the bill yellow. The bare margin of the eyelids vermilion, their horny appendages greyish-blue. Feet vermilion ; claws light-brown, dusky at the end. All the upper parts black, tinged with grey, glossed with greenish-blue on the back ; continuous with the black of the hind-neck a broad band of blackish-grey across the neck. The sides of the head from over the eye to the throat, white ; the cheeks tinged with grey ; and the throat with a deeper tint of the same. The lower parts white.

Length to end of tail 12 inches ; extent of wings 23 ; wing from flexure $6\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$; its height at the base $1\frac{8}{12}$; gape-line $1\frac{7}{12}$; tarsus 1 ; middle toe $1\frac{5}{12}$, its claw $\frac{6}{12}$.

FEMALE.—The female is not distinguishable from the male unless by dissection. The size, however, is somewhat less.

HABITS.—The Puffin makes its appearance on our coasts from the middle of April to the beginning of May, presently betaking itself to various breeding stations, scattered here and there from the British Channel to Shetland and the remote Hebrides. “ On the stupendous cliffs of Dover,” says Montagu, “ and such other places, they burrow like rabbits, if the soil is light, but more frequently take possession of rabbit-burrows, and lay their eggs many feet under ground. This is the case in Priestholm Isle, off the coast of Anglesea, and other small islands off St. David’s, where the soil is sandy.” They also frequent the Scilly Islands, Cornwall, the Isle of Wight, some parts of Yorkshire, the Fern Islands, and in Scotland so many places that it is unnecessary to specify them. The Bass Rock, Dunbye, near Slains Castle, on the coast of Aberdeenshire, and Berneray of Barray, the southern extremity of the Outer Hebrides, are the breeding-places at which I have particularly attended to their habits, which are very similar to those of the Razor-bill.

They sit lightly on the water, swim with celerity, turn and move about with smartness, dive headlong and fly under the water in pursuit of small fishes and crustacea, or betake

themselves to the bottom to search for mollusca. When proceeding to a distance they fly in small bands, in file, just above the waves, and on approaching their nests, which are often at the height of a hundred feet or more, curve upwards and alight abruptly. On the water they usually allow a near approach, and when stationed on the rocks they seem almost quite fearless, and may be shot in great numbers, or even taken with a noose. In the places where I have seen them, they formed the holes themselves, by digging with their strong bills, to a depth varying from one to two feet or more. There is no nest, the single egg being laid on the floor at the further end. The bird sits assiduously, and may be taken with the hand, which it is, however, apt to bite very severely. The egg varies in shape and size, being oval, ovato-pyriform, or somewhat oblong, and from two inches and seven-twelfths to two-twelfths less in length, and from an inch and three-fourths to four-twelfths less. It is roughish, with minute granules, and at first pure white, but soon becomes soiled. Some of the eggs are very faintly freckled with grey or pale-brown. The young continue in their nest or near it until able to fly. About the middle of August they all leave their breeding-places, and proceed southward. The desertion of the cliffs by the various sea-birds at this season produces a strange and disagreeable contrast to their crowded state during the summer, and is viewed by the poor islander with a kind of melancholy regret, less intense, however, than the joy he experiences when he finds them, for the first time for the season, returned to their favourite haunts. How many hearts have thrilled with pleasure when the early notes of the Corn Crake or Cuckoo came on the ear! But how faint is the sentimental feeling of happiness so caused compared with the delight which pervades the whole frame, moral and physical, of the Esquimaux, who has been buried all winter in snow, when he hears the trumpet-cries of the Wild Goose, or of the native of St. Kilda, whose stock of salted fowl has been exhausted, when, on visiting the long deserted cliffs, he finds its shelves covered with Razor-bills, and its grassy summits peopled with Puffins. Many persons have written of St. Kilda, from "M. Martin, Gentleman," to Dr. McCulloch

Geologist, and among them some who never saw it. A friend of mine, Mr. John MacGillivray, made a hurried visit to it in 1839, and having scrambled to the top of a high hill, came suddenly upon the edge of a magnificent precipice.

“Far below me could be seen the long heavy swell rolling in from the Atlantic, and climbing up the dark rock whose base it clothed with sheets of snow-white foam, as it broke with a sound at times scarcely perceptible, but at intervals falling upon the ear like distant thunder. In many places the rock was scarcely visible on account of the absolute myriads of sea-birds sitting upon their nests; the air was literally filled with them, and the water seemed profusely dotted with the larger fowl, the smaller ones being nearly invisible on account of the distance. The sound of their wings as they flew past, joined to their harsh screams as they wheeled along the face of the cliff, startled me from the reverie into which I was thrown by the strange scene before me. Every little ledge was thickly covered with Kittiwakes, Auks, and Guillemots; all the grassy spots were tenanted by the Fulmar, and honeycombed by myriads of Puffins; while close to the water, on the wet rocks which were hollowed out into deep caves, sat clusters of Cormorants, erect and motionless, like so many unclean spirits guarding the entrance of some gloomy cavern. On rolling down a large stone from the summit, a strange scene of confusion ensued. It would, perhaps, fall on some unhappy Fulmar sitting upon the nest, crushing her in an instant; then rolling down the crags, which reverberated its echoes far and near, tearing long furrows in the grassy slopes, and being shivered into fragments upon some projecting crag, scattering in dismay the dense groups of Auks and Guillemots. Its progress is all along marked by the clouds of birds which affrighted shoot out from the precipice to avoid the fate which, nevertheless, would befall many, until at length it reaches the bottom, and is received into the water along with its many victims. The startled tenants of the rock now return to their resting-places, and all is again comparatively quiet.

“By far the most abundant species in St. Kilda is the

Puffin, *Mormon arcticus* (Buikir or Boujer), which breeds in the crevices of the rocks, as well as in artificial burrows in almost every situation, sometimes at a considerable distance from the water's edge. This bird is taken by the fowlers in two ways: when on its nest, by introducing the hand and dragging out the bird, at the risk of a severe bite; and when sitting on the rocks, by means of a noose of horse-hair attached to a slender rod, generally formed of bamboo-cane (procured probably from some wreck). The latter mode of fowling is most successful in wet weather, as the Puffins then sit best upon the rocks, allowing a person to approach within a few yards; and as many as three hundred may be taken in the course of the day by an expert bird-catcher.

“Of all the St. Kilda birds, the Puffin probably affords the greatest amusement to the sportsman, as well from the rapidity of its flight as its habit of congregating in dense masses when sitting upon the rocks. As many as a dozen may often be secured at a single shot; and I have more than once seen a small shelf, about the size of a table, which was swept bare at a single discharge, the birds falling into the sea below. The smoke had scarcely cleared away, when the scene of slaughter was as thickly crowded as ever, and many more might have been easily procured. The food of the Puffin during my visit I believe to have been chiefly the fry of the coal-fish, *Gadus carbonarius*, from having repeatedly shot the birds flying to their nests with this fish in their bills; and I thus found that both males and females supply the young with food. The Puffin forms the chief article of food with the St. Kildians during the summer months, and is usually cooked by roasting among the ashes.”

Dr. Edmondston, in his Notes, says it is “very numerous in Shetland, breeds in holes in the green or disintegrating precipices, and lays one egg. The young are full-grown before they quit the nest.” Extending in summer to Feroe, Iceland, various parts of Scandinavia, and even Nova Zembla, it is found in winter on the coasts of France and Spain, although the limit of its southward migration is not known. On the eastern side of America it extends from Georgia to Labrador. Mr. Audubon gives an excellent

account of its habits, part of which, referring more especially to its breeding, it may be proper to present. There is on the coast of Labrador a small island, "known to all the cod-fishers, and celebrated for the number of Puffins that annually breed there. As we rowed towards it, although we found the water literally covered with thousands of these birds, the number that flew over and around the green island seemed much greater, insomuch that one might have imagined half the Puffins in the world had assembled there. This far-famed isle is of considerable extent, its shores are guarded by numberless blocks of rocks, and within a few yards of it the water is several fathoms in depth. The ground rises in the form of an amphitheatre to the height of about seventy feet, the greatest length being from north to south, and its southern extremity fronting the Streight of Belleisle. For every burrow in the island previously visited by us there seemed to be a hundred here; on every crag or stone stood a Puffin; at the entrance of each hole another; and yet the sea was covered and the air filled by them. I had two double-barrelled guns and two sailors to assist me, and I shot for one hour by my watch, always firing at a single bird on wing. How many Puffins I killed in that time I take the liberty of leaving you to guess. (Naughty John! Have I not heard you say, "I hate to see birds shot when breeding;" to which the very apt reply was made, "By any person but yourself." See vol. ii. p. 466. But, however—) The burrows were all inhabited by young birds, of different ages and sizes; and clouds of Puffins flew over our heads, each individual holding a 'lint' by the head. This fish, which measures four or five inches in length, and is of a very slender form, with a beautiful silvery hue, existed in vast shoals in the deep water around the island. The speed with which the birds flew made the fish incline by the side of their neck. While flying the Puffins emitted a loud croaking noise, but they never dropped the fish; and many of them, when brought down by a shot, still held their prey fast. I observed with concern the extraordinary affection manifested by these birds towards each other; for, whenever one fell dead or wounded on the water, its mate

or a stranger immediately alighted by its side, swam round it, pushed it with its bill as if to urge it to fly or dive, and seldom would leave it until an oar was raised to knock it on the head, when at last, aware of the danger, it would plunge below in an instant. Those which fell wounded immediately ran with speed to some hole, and dived into it, on which no further effort was made to secure them. Those which happened to be caught alive in the hand bit most severely, and scratched with their claws at such a rate that we were glad to let them escape. The burrows here communicated in various ways with each other, so that the whole island was perforated as if by a multitude of subterranean labyrinths, over which one could not run without the risk of falling at every step. The voices of the young sounded beneath our feet like voices from the grave, and the stench was extremely disagreeable; so that as soon as our boats were filled with birds we were glad to get away. During the whole of our visit the birds never left the place, but constantly attended to their avocations. Here one would rise beneath our feet, there, within a few yards of us, another would alight with a fish, and dive into its burrow, or feed the young that stood waiting at the entrance. The young birds were far from being friendly towards each other, and those which we carried with us kept continually fighting so long as we kept them alive. They used their yet extremely small bills with great courage and pertinacity, and their cries resembled the wailings of young whelps. The smaller individuals were fed by the parents by regurgitation, or received little pieces of fish which were placed in their mouth; the larger picked up the pieces of fish that were dropped before them; but almost all of them seemed to crawl to the entrance of the holes for the purpose of being fed. In all the burrows that communicated with others, a round place was scooped out on one side of the avenue, in the form of an oven, while in those which were single, this oven-like place was found at the end, and was larger than the corridor. All the passages were flattish above, and rounded beneath, as well as on the sides. In many instances we found two birds sitting each on its own egg in the same hole."

YOUNG.—The young are at first covered with very stiffish down of a brownish-black colour, part of the abdomen being white. The bill, at first extremely small, oblong, and compressed, attains a considerable size, but still has not the furrows distinctly marked, when the young is fledged, which is about the end of July. I have not taken note of the changes which take place as the bird advances in age. M. Temminck, however, states that “the young of the year have the bill much smaller, smooth on the sides, destitute of furrows, and of a yellowish-brown; the space between the eye and the bill of a blackish-grey; the cheeks and the throat of a deeper grey than in the old birds; the broad collar shaded anteriorly with blackish-grey; the feet dull red.”

PELECANINÆ.

PELICANS AND ALLIED SPECIES.

THERE is not a more intelligibly instructive family of birds than that of the Pelecaninæ. Placed on the confines of the two conterminous orders of the Urinatores and Mersatores, they exhibit in the genus *Phalacrocorax*, and especially in *Plotus*, a perfect conformity with the former, and in *Sula* an alliance to the latter, so perfected in *Phaeton* that it would seem doubtful to which of the two orders that genus ought to be referred. With all this, there pervades the whole group a uniformity of structure, evident in the skeleton, and especially in the digestive organs, which no unprejudiced examiner could mistake, however much it runs into modifications suitable to the differences of habits which the species present. But as it might be unsuitable here to offer a view of the gradations alluded to, we having too few species to illustrate them, I shall briefly give the more obvious characters of the Pelecaninæ.

They are birds mostly of large size, having the body elongated and rather slender; the neck long; the head various in size and form, generally moderate. The bill longer than the head, rather slender or stout, straight; the upper mandible with the ridge separated from the sides by grooves, and terminated by a narrow, generally decurved, pointed unguis; the lower mandible with the crura elastic, extensile, and not united until near the tip. There is generally a bare space around and before the eye, extending to the bill, and the skin of the throat is bare, in some species forming a large pouch.

The tongue is extremely diminutive; the œsophagus excessively wide; the belt of proventricular glandules gene-

rally discontinuous ; the stomach very small, and but slightly muscular, with the epithelium smooth ; there is always a round hollow appendage at the pylorus ; the intestine is very long and slender, with small cylindrical cœca, and a large globose cloaca.

The nostrils are basal, lateral, linear, small, or altogether obliterated. The eyes of moderate size. The apertures of the ears small. The feet short and stout ; the tarsus compressed ; the toes four, all connected by membranes, the fourth toe longest ; the claws short, strong, curved, that of the third toe generally pectinate on the expanded inner edge.

The plumage is soft, blended, on the back and wings compact and imbricated. The wings are long ; the tail of moderate length, and narrow.

The habits of these birds are very different ; for, while the Cormorants pursue their prey much in the same manner as the Mergansers and Loons, and the Anhingas are still more strictly urinatorial, the Pelicans combine the characters of urinatorial and mersatorial birds ; the Gannets fly about in quest of food, plunging upon it from on high ; the Frigate-Birds range over the seas with scarcely-rivalled speed of wing, and the Tropic-birds resemble Terns in their mode of flight. They all feed on fish, however, and all are very voracious. They nestle on rocks, bushes, or trees, forming a clumsy and ill-constructed nest, and lay a small number of bluish-white eggs, crusted over with an irregular layer of calcareous granules. The young, at first almost naked, and generally black, continue in the nest until able to fly. Only two genera have representatives in Britain.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. PHALACROCORAX. CORMORANT.

Bill about the length of the head, rather slender, nearly straight, compressed toward the end ; upper mandible with the dorsal line concave, the ridge convex, with a narrow

groove on each side, the sides convex, the edges sharp, the unguis decurved, acute ; lower mandible with the angle long, filled by a bare extensile membrane, the sides convex, the edges sharp and inflexed, the tip compressed, with its upper outline decurved. Nostrils obliterated. Feet stout ; tarsus very short, strong, covered all round with angular scales ; toes all in the same plane, and connected by webs, the fourth longest ; claws strong, arched, compressed, that of the third pectinate. Plumage soft ; wings of moderate size, broad, the second quill longest ; tail of moderate length, very narrow, much rounded.

1. *Phalacrocorax Carbo*. *Great Cormorant*. Tail of fourteen feathers ; a small longitudinal occipital crest in summer ; throat, and a patch over each thigh white.

2. *Phalacrocorax Graculus*. *Green Cormorant*. Tail of twelve feathers ; a crest of oblong, erect, incurvate feathers ; plumage blackish-green ; feathers of the back ovate, with velvety margins.

GENUS II. SULA. GANNET.

Bill longer than the head, stout, conical, straight, moderately compressed toward the end ; upper mandible with the ridge broadly convex, with a narrow groove on each side, the sides erect, the edges sharp and serrate, the tip a little deflexed ; lower mandible with the angle long, filled by a bare membrane, the edges sharp and serrate, the tip compressed. Nostrils obliterated. Feet stout ; tarsus very short, strong, sharp behind, reticulated, but having narrow lines of scutella continuous with the toes ; which are all in the same plane, and webbed, the third longest ; claws arched, compressed, that of the third toe pectinate. Wings long, rather narrow, pointed ; tail rather long, graduated.

1. *Sula Bassana*. *Common Gannet*. Bill bluish-grey ; bare parts on the head blackish-blue ; plumage white ; head and neck tinged with reddish-yellow ; primary quills dusky.

PHALACROCORAX. CORMORANT.

THE Cormorants are birds of large or moderate size, having the body elongated, rather full, depressed ; the neck long and stout ; the head rather large, oblong, anteriorly narrowed. The bill about the length of the head, straight, rather slender, compressed, opening from far behind the eyes ; upper mandible with the dorsal line slightly declinate and somewhat concave, then nearly direct, at the tip decurved, the ridge broad and rounded, separated by a very narrow groove from the sides, which are convex, erect, and irregularly scaly, with a slender separate piece at the base; the edges sharp and somewhat inclinate, the unguis narrow, convex, decurved, thin-edged, but obtuse ; lower mandible with the angle very long and narrow, the intercrural membrane partly bare, the outline of the crura nearly straight, the dorsal line declinate, the sides scaly, erect, and somewhat convex, the edges sharp and inflexed, the tip compressed, obliquely truncate, formed of an involute unguis, with a slender intercalated piece ; the gape-line ascending at the base, then straight, at the end decurved.

Mouth wide, and capable of being much dilated by the flexibility of both mandibles toward the base, there being on both a kind of joint on each side ; the palate flattened, with two prominent ridges ; the posterior aperture of the nares linear. Tongue extremely small, ovate-lanceolate, thin, cariate above. Œsophagus extremely wide, contracting considerably as it enters the thorax, then dilated into an enormous sac ; its transverse muscular fibres very distinct, as are the internal longitudinal, the inner coat when contracted forming prominent longitudinal plicæ ; proventricular glands arranged in two opposite round disks, sometimes, however, forming a continuous belt, narrowed at two places. Stomach

roundish, large, with the muscular coat very thin, being reduced to a single series of slender fibres, the inner coat soft and smooth. There is a distinct roundish pyloric lobe. The duodenum at first curves upwards or forwards, then returns and assumes its ordinary course, forming a loop; the intestine of moderate length and width; the cæca very short and obtuse; the rectum with a large globular cloaca.

Nostrils obliterated in the adult, the internal passage remaining open, but the outer filled up. Eyes rather small, with the eyelids bare, as is a large space at the base of both mandibles. Aperture of ear very small. Feet short, stout, placed far behind; tibia feathered in its whole length; tarsus very short, much compressed, reticulated with scales, of which the inner are transversely elongated, the outer sub-hexagonal, the posterior very small. Toes four, in the same plane; the first directed inwards and small, the fourth longest, all with numerous oblique scutella, and connected by webs. Claws strong, curved, compressed, acute, that of the third toe with a pectinate inner edge.

Plumage of the head, neck, lower neck, and hind part of the back, glossy, blended, and silky; of the wings and fore part of the back compact, the feathers ovate, imbricated, with loose silky margins. Wings rather large and broad, convex; primaries short, strong, tapering, obtuse, the third longest; secondaries broad, rounded; scapulars large and strong. Tail rather small, rounded, of from twelve to sixteen, narrow, straight feathers, having very strong shafts and firm webs.

Species of this genus occur on almost every rocky coast, and often on low coasts having trees along the water edge. In searching for their food, which consists entirely of fish, they seldom go to a great distance from the land. They swim and dive with extreme agility, sink in the water when alarmed, have a moderately quick, even flight, perch on rocks or trees, and nestle in both situations. The nest is bulky and rudely constructed; the eggs from two to five, oblong or narrow-elliptical, bluish-white, crusted with white calcareous matter, as in the Pelicans and Gannets. The young at first black, blind, and naked, are soon partially covered with down, and are fed with half-digested fish from the gullet of

their mother. They remain in the nest until fledged, when their nostrils become obliterated. The Cormorants never fish by plunging from on wing. They generally in diving leap out of the water in a curve, and descend with great force. In their digestive organs they resemble the Pelicans and Gannets.

Two species occur in Britain, both generally distributed, and permanently resident.

PHALACROCORAX CARBO. THE GREAT CORMORANT.

GREAT CORMORANT. WHITE-HEADED CORMORANT. WHITE-SPOT CORMORANT. CRESTED CORMORANT. GREAT SCART OR SCARVE. COAL GOOSE. BROUGIE. SCARBH-BUILL.



FIG. 85.

Pelecanus Carbo. Linn. Syst. Nat. I. 216.

Pelecanus Carbo. Lath. Ind. Ornith. II. 886.

Cormorant. Mont. Ornith. Dict. and Suppl.

Grand Cormoran. *Carbo Cormoranus.* Temm. Man. d'Ornith. II. 894.

Common Cormorant. *Phalacrocorax Carbo.* Selby, Illustr. II. 446.

Phalacrocorax Carbo. Common Cormorant. Jenyns, Brit. Vert. An. 263.

Length about three feet ; tail of fourteen feathers ; imbricated feathers of the back and wings ovate, rounded, with silky margins. Adult in winter crestless ; the head, neck, lower parts, middle and hind part of the back, greenish-black, tinged with blue ; the feathers of the fore part and sides of the back, with the wing-coverts and secondary quills, greyish-

brown or bronzed, with greenish-black margins; a greyish-white band on the throat, ascending to the eyes; some scattered, extremely minute, filiform, pencil-tipped, white plumulets on the head and neck, and a few white streaks over the thigh. Adult in spring coloured as in winter, with the addition of a longitudinal greenish-black crest, numerous linear white feathers on the head and neck, the throat-band pure white, and a roundish patch of that colour over the thigh. Young with the upper part of the head and the neck dusky-brown, finely streaked with brownish-grey; cheeks and fore-neck greyish-white, mottled with brownish-grey; a brownish-white band on the throat; lower parts greyish-white, mottled with dusky, becoming darker behind; upper parts nearly as in the adult.

MALE IN WINTER.—Although not of an elegant form, nor remarkable for beauty of colouring, the Great Cormorant has a conspicuous appearance when, perched on some surf-beaten crag, he stands nearly erect, writhing his long neck, as he eyes the approaching boat with suspicion. His body is large, full, depressed and elongated, his neck about a fourth shorter, and very thick; his head oblong, flattened above, anteriorly narrowed. The bill is shorter than the head, but opens to beyond the eyes, stout, firm, but rather slender, compressed, nearly straight, at the tip decurved, and having the sides irregularly scaly. The upper mandible has the dorsal line considerably concave, the ridge rounded, with a narrow groove on each side, the sides convex, the unguis narrow, decurved, thin-edged, but rather obtuse, the edges sharp and a little inflexed, the separate basal piece on each side elongated and narrow; the lower mandible with the basal portion rather broad and laterally somewhat concave, the crura rather narrow, their sides erect and convex, the lower outline straight, the intercrural space very long, narrow, with a bare extensile membrane, the intercalated piece slender, the dorsal line slightly descending, the tip compressed, and obliquely truncate, the edges sharp and inflexed; the gape-line ascending at the base, then straight, at the end decurved.

The mouth is rather wide, and capable of being much

distended ; the palate flat, with two very prominent ridges ; the posterior nasal aperture linear. The tongue is oblong, carinate above, extremely small, being only seven-twelfths long, and three-twelfths in breadth. The œsophagus, twenty-two inches long, is very wide, with extremely thin walls, measuring when inflated from two and a half to two inches in width, and within the thorax dilated to three inches. The walls of the proventriculus are very thick, and its glandules, which are large, disposed in two circular patches about two inches and a half in diameter, and separated by two spaces of about a quarter of an inch. The stomach is comparatively small, of a semicircular shape, forming the bottom of the proventricular sac, somewhat compressed, with its walls very thin, the muscular coat being composed of a single series of fibres, with rounded thin tendinous spaces, and a rather thick, soft, and rugous epithelium. There is a roundish pyloric lobe. The intestine, eight and a half feet long, varies in width from four to three-twelfths, at first curves forwards, then describes the usual duodenal curve, and is convoluted with ten folds. The cœca are only four-twelfths long, and three-twelfths in breadth ; the rectum seven inches in length, with a very large cloacal dilatation of a globular form, two inches and a quarter in diameter.

The nostrils are completely obliterated by ossification, although their place is faintly indicated externally ; but the nasal cavity is open and continuous with the posterior nares. The eyes are small ; the aperture of the ear only a twelfth in width. The feet are short, very strong, and placed far behind ; the tibia feathered to the joint ; the tarsus compressed, reticulated, with about twenty scutella ; the second toe with thirty-five, the third with fifty-two, the outer, which is longest, with seventy-five ; the interdigital webs full. The claws moderate, compressed, arched, strong, rather acute, that of the third toe pectinate.

The plumage is dense and rather short ; on the head, neck, lower parts in general, and hind part of the back, silky and blended ; on the wings and fore part of the back firm, imbricated ; the feathers ovate, satiny, with silky margins. On the occiput and nape the feathers are slightly longer ; and

on the head and upper neck are interspersed very slender white filaments having a pectinate tip. The space round the eyes, and along the base of the bill, together with the gular membrane, are bare. The wings are rather large and broad, convex, and somewhat rounded, but when folded seem short, the primary quills being comparatively small, and the longest not extending beyond the base of the tail; they are very strong, tapering, obtuse; the third longest, the second nearly two-twelfths of an inch shorter, and exceeding the first by four-twelfths; the secondaries eighteen, of moderate breadth, and broadly rounded. The tail is of moderate length, narrow, straight, much rounded, of fourteen stiff, strong-shafted, rounded feathers, of which the outer is an inch and a half shorter than the middle.

The bill is greyish-brown on the sides, dusky on the ridge, with the tips brown, the base yellowish-white. The iris bright green, the edges of the eyelids dusky. The bare space around the eye is dull greenish-brown, below it bright yellow, as is the gular sac. The feet and claws are greyish-black. The silky plumage of the head, neck, lower parts, a medial band down the back, and its middle and hind parts, are black, glossed with bluish-green. A broad band of white crosses the throat from one eye to the other; the filamentous plumelets on the head and neck are also white, as is a broken patch on each side over the thigh, composed of elongated linear feathers. The feathers on the fore part and sides of the back, the scapulars, the wing-coverts, and secondary quills, are greyish-brown, with bronze and green reflections, and edged with greenish-black. The primary quills and tail-feathers are greyish-black. The shafts of all the feathers are greyish-blue at the base, becoming black toward the end.

Length to end of tail 38 inches; extent of wings 60; wing from flexure 14; tail 6; bill along the ridge $3\frac{2}{12}$, along the edge of lower mandible $4\frac{2}{12}$; tarsus $2\frac{2}{12}$; hind toe $1\frac{2}{12}$, its claw $\frac{6}{12}$; second toe $1\frac{10}{12}$, its claw $\frac{8}{12}$; third toe $2\frac{8}{12}$, its claw $\frac{8}{12}$; fourth toe $3\frac{10}{12}$, its claw $\frac{6}{12}$.

FEMALE IN WINTER.—The female is similar to the male, but smaller.

Length to end of tail 35 inches ; extent of wings 58 ; wing from flexure $13\frac{1}{2}$; tail 6 ; bill along the ridge 2 ; tarsus 2 ; outer toe and claw $4\frac{3}{2}$.

VARIATIONS.—Great differences are observed as to size in adult birds of the same sex, some individuals being so much smaller as at first to seem of another species. Unless in the tint of the feathers of the back and wings, which may be lighter or darker, sometimes approaching to grey, old birds do not appear to vary much.

CHANGES OF PLUMAGE.—The general moult takes place from the middle of summer to September. The plumage continues as described above until March or April, when a partial change takes place, consisting chiefly of the production of numerous slender white feathers on the head and neck, as well as on the thighs, together with an elongated crest of linear feathers. As the summer advances, the bronzed tints of the upper parts become of a paler brown.

MALE IN SUMMER.—The bare parts at the base of the bill are of a purer yellow. There is an elongated longitudinal crest of greenish-black feathers on the head and nape ; the band on the throat and cheeks is pure white ; among the feathers of the head and upper neck are numerous linear loose-edged white feathers, giving those parts a hoary appearance ; and over each thigh is a large patch of similar more elongated white feathers.

FEMALE IN SUMMER.—The female is similar to the male.

HABITS.—The Great Cormorant occurs in considerable numbers, here and there, on all our rocky coasts, frequenting bold headlands, high cliffs, and rugged insular crags. It generally keeps apart from the Crested Cormorant, and, when the two species occur in the same locality, assumes a more elevated station, the other betaking itself to the caves, or perching on the lower shelves. At certain states of the tide, chiefly, I think, about low water, and not at any particular

time of the day, for I have observed them early in the morning, at noon, and in the evening, the Cormorants may be seen standing lazily on the rocks, some with outspread wings, as if sunning themselves, or drying their plumage, others reposing, with the head under one of their wings, or directed forwards on their retracted neck. Should a boat approach them they soon become alarmed, raise one foot after the other, and throw their long necks about in a singular manner, straining themselves to perceive the intruders, their sight being apparently not very clear in the open air, however penetrating in the water. I have thought it remarkable that they will allow a vessel propelled by steam to pass much nearer than an ordinary boat, without removing; but this is equally the case with many other sea-birds. When fairly alarmed, they take to wing, launching in a curved line, and then flying low over the water, with a moderately quick, sedate, and even flight, usually in silence. Sometimes, however, they plunge headlong into the water, and emerge at a great distance. I have never seen them alight on land anywhere but on rock, and there, besides being restrained by the nature of the place, their motions are awkward, they not being at all fitted for walking. They alight heavily, and rather abruptly, keep in a much inclined position, and seldom remove to any distance. On the sea also they alight heavily, and sit deep in the water, having the faculty, when apprehensive of danger, of sinking still deeper, so as to leave little exposed to view. They swim with surprising speed, often immerse their bill, and even the whole head, as they proceed, and dive with extreme agility, with a sudden dart, and without opening their wings until they are under the surface, but then using them, as well as their feet, to propel themselves. In rising from the water into the air, they advance several yards, flapping the sea with their wings and feet, before they obtain a free course. Their food consists of small fishes, up to the size of a herring. On seizing their prey they come to the surface, toss their head until the fish assumes a proper position, and swallow it head-foremost; or occasionally toss it up in the air, and seize it again with open throat. Should it be too large to be swallowed, they beat and tear it with their bill, sometimes retiring

on shore for the purpose. I have usually found fragments of quartz and bits of stone in the stomach ; but these may have been swallowed by the fishes on which they had fed ; for the membranous structure of the stomach incapacitates it from pounding or grinding the food.

These birds seldom roost all the year round in the places where they nestle, but generally after the breeding season repose at night on some rock at a convenient distance from their fishing-stations, which, during winter, are chiefly in estuaries, bays, and creeks, although often also in the open sea. In one of the islands in the sound of Harris is a rock on which these birds rest at night, especially in winter. A person well acquainted with the place, as I have been informed, has ascended the cliff in the dark, and moving cautiously, has secured a considerable number of individuals before the rest became alarmed, breaking by a sudden bend the neck of each as he caught it. The natives of St. Kilda use the same method in catching Gannets. The Cormorants fly to and from these places in strings, at no great height over the water, with a steady and moderately quick flight, strongly contrasted with that of Gulls and Terns, which are ever deviating to either side, and resembling that of the Gannets, which, however, have a lighter flight, and sail at frequent intervals. Shy and suspicious, they seldom, even in the most unfrequented places, allow a near approach, and when fishing in a creek, or place overlooked by high banks, are particularly vigilant. If they see a person at some distance, they sink their body deeper in the water ; and should one come nearer, they keep it entirely submersed, the head and part of the neck only being visible. As they dive with extreme rapidity, it is very difficult to shoot them while they are fishing. They are not much in request, however, among sportsmen and poachers, for, although in some remote parts their flesh is esteemed tolerable eating, it is of a dark-red colour, disagreeable to the eye not less than to the palate ; but its being strong-flavoured or fishy renders it not inapt for soup, in the state of which the juices of the Cormorant are not unpleasant. The young are somewhat better, but the eggs are never eaten.

In spring, when the nuptial dress is advanced, they pair, and soon after betake themselves to their breeding-places, usually shelves of exposed rock, at a considerable height, and easily discovered by the quantity of white dung spread around. The nest is very large, and rudely formed, being composed of sticks and sea-weeds, heaped up sometimes to the height of a foot or more, with a shallow cavity at the top. The eggs, generally three, sometimes four, are of an oblong form, two inches and eight-twelfths in length, an inch and three-fourths in breadth, and, like those of every other species of Cormorant, may be described as having a thick roughish bluish-white shell, irregularly crusted over with a layer of white calcareous matter, easily removed with a sponge and water.

There is nothing particularly estimable in the character of the Cormorant. It is extremely attentive to its young, quiet and inoffensive in its general conduct, of a sluggish disposition, unless when in the water, and then exhibiting the greatest activity. Its voice is a low, hoarse croak, seldom heard. Extremely voracious, it swallows an enormous quantity of food ; but in this respect is rivalled by the Gannet, the Goosanders, and indeed almost all sea-birds. When it betakes itself, as it sometimes does in winter, to fish-ponds, it commits great havoc. At that season, it often ascends rivers, and is sometimes seen perched on the trees, which is noways remarkable, as the Cormorants of warm climates, when the shores are low, not only perch, but nestle, on the mangroves. It is easily tamed, and is then familiar, and even manifests an affectionate disposition. An interesting account is given by Montagu of one which he kept for a long time ; but as his narrative is too lengthy to be inserted here, I shall present it in an abridged form.

The bird in question was surprised by a Newfoundland dog, belonging to a fisherman, under the banks of a rivulet that ran into the Bristol Channel. In about a week it was perfectly familiarized, making one in the family circle round the fire, and suffering the caresses of the children, who were very unwilling to part with it. On being conveyed to the ornithologist's, and liberated, it was offered every sort of food at hand, there being no fish, but refused it, and therefore

was forcibly crammed with flesh. On being removed to an aquatic menagerie, and let loose, it instantly plunged into the water, and dived incessantly, but not obtaining a single fish, appeared to be convinced there were none, and made no other attempt for three days, during which it was crammed with flesh. Its proper food, however, was at length procured for it. It dived and seized its prey with surprising dexterity, frequently proceeding under the surface to the place where a fish had been thrown, and, when the water was clear, taking it with certainty, often before it fell to the bottom. It readily devoured three or four pounds of fish twice a-day, so rapid was its digestion. When a large fish stuck in the gullet, it inflated that part, and shook the head and neck violently to promote its passage. In fishing it always carried the head under water, in order, apparently, to discover its prey at a greater distance, and with more certainty. All fish were invariably turned in the bill, so as to present the head foremost; and when an eel, the most favourite food, was not seized favourably, it was thrown up to some distance, and caught in such a manner as to render deglutition easy. It had a habit of beating the water with its wings violently, without moving from the spot, each beating being succeeded by a shake of the whole body and a ruffling of all the feathers, at the same time covering itself with the water. This action it repeated ten or twenty times with small intervals of rest, and then repaired to a tump, or some elevated place on shore, and spread or flapped its wings until they were dry. It lived in perfect harmony with other birds, and never attempted to ramble, but walked to the house, entered the first open door without deference to any one, and in fact was troublesomely tame.

Mr. Audubon accounts for the flappings above mentioned in this manner:—"Cormorants, Pelicans, Ducks, and other water-birds of various kinds, are, like land-birds, at times infested with insects, which lodge near the roots of their feathers; and to clear themselves of this vermin, they beat up the water about them by flapping their wings, their feathers being all the while ruffled up, and rub or scratch themselves with their feet and claws, much in the same

manner as Turkeys and most land-birds act, when scattering up the dry warm earth or sand over them. The water-birds, after thus cleaning themselves, remove, if perchers and able to fly, to the branches of trees, spread out their wings and tail in the sun, and after a while dress their plumage. Those which are not perchers, or whose wings are too wet, swim to the shores, or to such banks or rocks as are above water, and there perform the same process."

This species is not nearly so common in the Hebrides, or along the western and northern coasts of Scotland, as the Crested Cormorant. In Shetland, as Dr. Edmondston informs me, "it is pretty numerous, though not by far so much so as the Shag. It is," he continues, "social in the breeding season, several pairs having their nests near each other on the same cliff, and at a greater altitude than the other species. It also at other seasons perches and roosts in higher situations, and has a more lofty and easy flight. Its mode of diving is somewhat like that of the Great Northern Diver, gliding gently under, not like the Shag, *per saltum*. It is very easily tamed, and displays great sagacity, gentleness, and affection. I see no reason why it might not be made of as great use as its fishing relative in China. The young often frequent fresh-water lochs. It is a beautiful, intelligent, and interesting bird, and does not deserve the popular odium which Milton—it may be justly as a poet, but most unjustly as a naturalist—has affixed to it. It produces usually three, seldom four young." Mr. Low says it "is very frequent" in Orkney, "both in salt and fresh water; continues all the year, living on fish, of which it destroys great numbers. The Corvorant seems to have but little other concern than how to eat enough; it is, indeed, surprising what quantities of fish it will gorge itself with, and, when it has filled itself to the throat, retires to some point, where it sits till hunger compels it to the water again." I have seen Cormorants at the entrance of the Cromarty Firth, and on various parts of the coast, as far south as the Firth of Forth, on the rocky islands of which they are not uncommon. Some rocks off Seafield Tower, near Kirkaldy, are a favourite resting-place with this and

our other species, as are several of the rocky islets farther up the firth. Mr. Selby describes its nests as examined by him on the Fern Islands. Whether there be any breeding-places farther south or not, individuals are seen and occasionally procured along the eastern and southern coasts; but it does not appear to become numerous until we arrive on the coasts of Wales, where Montagu says he has seen "an insulated rock covered with their nests, which are composed of sticks and sea-weed." From thence northward they appear to be more numerous.

It occurs equally on the coasts of the continent of Europe, extending as far as the Mediterranean. M. Temminck states its occurrence even in the Ganges. In North America, according to Mr. Audubon, it is rarely seen farther south than the extreme limits of Maryland, becomes more plentiful from Chesapeake Bay eastward, and is abundant on the coasts of the northern states, Nova Scotia, and Labrador.

YOUNG.—Like those of other Cormorants, the young at first have a very singular appearance, owing to their dusky colour, and the disproportionately large size of their feet. Their skin is bare, and of a dull livid tint; the bill flesh-coloured at the base, dusky toward the end; the feet bluish-black, with the webs light brown. In a few days they become covered with brownish-black down, except the head, upper part of the neck, lower surface of the wings, and abdomen; and in about eight weeks are able to fly, until which time they remain in the nest. When fully fledged, they are as follows:—

The bill is pale brown, dusky on the ridge; the iris brown; the bare skin at the base of the bill flesh-coloured; the feet black. The upper parts are greenish-brown, the head and neck streaked with paler; the feathers of the fore part and sides of the back, with the wing-coverts, brownish-grey, bordered with dark brown; the fore-neck and lower parts of the body greyish-brown, shaded into brownish-white on the middle of the breast and abdomen; the quills and tail-feathers brownish-black. The throat-band obscurely indicated, being greyish-white, with faint brown streaks.

PROGRESS TOWARD MATURITY.—The young moult in the middle of autumn, and in the beginning of winter are as follows :—The bill is blackish-brown on the ridge and dorsal part of the unguis, brownish-grey on the sides, approaching to flesh-colour at the base, with the bare skin yellow. The upper part of the head and the hind-neck are brownish-black ; the back greenish-black ; but the feathers of its fore part, the scapulars, and wing-coverts brownish-grey, edged with greenish-black ; the larger wing-coverts with an external narrow edging of brownish-white ; the quills brownish-black, the secondaries shaded with greyish-brown ; the tail-feathers greyish-black, with lead-coloured shafts. The throat-band brownish-white ; the fore part of the neck greyish-white, mottled with light brown ; the breast and abdomen greyish-white, shaded into greenish-black on the sides ; the lower wing-coverts sooty-brown, as are the feathers under the tail. The feet are black ; the claws brown.

The nostrils, which are at first basal, being placed at the commencement of the longitudinal groove bordering the ridge, and of a linear form, continue open for some weeks, but before the bird is fledged are found to be closed externally by horny scales, and in the bone by ossification.

PHALACROCORAX GRACULUS. THE GREEN CORMORANT.

GREEN CORMORANT. BLACK CORMORANT. CRESTED CORMORANT.
SHAG. SCART. SCARV. SCARBH. GREEN SCOUT.

Pelecanus Graculus. Linn. Syst. Nat. I. 217.

Pelecanus Graculus. Lath. Ind. Ornith. II. 887.

Shag and Crested Shag. Mont. Ornith. Dict. and Suppl.

Cormoran largup. *Carbo cristatus.* Temm. Man. d'Ornith. II. 900.

Crested Shag, or Green Cormorant. *Phalacrocorax cristatus.* Selb. Illustr. II. 450.

Phalacrocorax cristatus. Crested Shag. Jenyns. Brit. Vert. Anim. 262.

Length about two feet and a quarter ; tail of twelve feathers ; imbricated feathers of the back ovate, rather acute, with velvety margins. Adult in winter crestless ; the head, neck, lower parts, middle and hind part of the back, blackish-green ; the feathers of the fore part and sides of the back, with the wing-coverts and secondary quills of a lighter green, with deep black margins ; some scattered, extremely minute, filiform, pencil-tipped white plumulets on the neck. Adult in spring coloured as in winter, with the addition of a tuft of oblong, erect, incurved feathers, about two inches in length, on the top of the head. Young with the upper part of the head and the neck greenish-brown ; the rest of the upper parts darker, the imbricated feathers of the back and wings with glossy margins ; the lower parts brownish-grey ; the throat and part of the breast inclining to white.

MALE IN WINTER.—The Green or Crested Cormorant is much inferior in size to the species already described, which it closely resembles in form ; having the body elongated and depressed ; the neck long and rather thick ; the head oblong, flattened above, and narrowed anteriorly. The bill is pro-

portionally longer and more slender than that of the Great Cormorant, being of about the same length as the head ; but may be described in the same terms, only its upper outline is straight, not concave, or very slightly so ; the gape-line almost quite straight, and commencing behind the eyes.

The nostrils obliterated ; the eyes small, their aperture three-twelfths and a half ; that of the ear scarcely one-twelfth. The feet are short and strong ; the tibia flattened to the joint ; the tarsus very short, compressed, externally covered with large hexagonal scales, internally with transversely elongated scales or plates, those behind small. The toes gradually increasing in length, from the first, which has about twenty scutella, to the outer, on which are fifty-five, the second having thirty-four, the third forty-five. The webs are full ; the claws moderate, compressed, arched, strong, rather acute, that of the third toe pectinate.

The plumage is dense, short, and highly glossed. The feathers of the head, neck, lower parts, and back soft, blended, and silky ; those of the fore part of the back, unless in the middle line, with the scapulars and wing-coverts, shortish, ovate, but rather acute, compact, imbricated, smooth, and satiny, with a velvety margin. On the neck are some filamentous pencil-tipped plumelets, so small as not to be readily perceived. The wings when folded reach only to the base of the tail, and are rather short, but broad ; with the primary quills short, tapering, with stiff shafts, the third longest, and exceeding the first by half an inch ; the secondaries narrowly rounded. The tail is of moderate length, being to the body as one to three, but narrow, straight, much rounded, of twelve strong-shafted feathers, of which the lateral are an inch and three-fourths shorter than the medial.

The bill is black, with the unguis brownish ; the base of the lower mandible and the basal margins of the upper, yellow, streaked with black ; the membrane at the angle of the mouth orange ; that between the crura of the lower mandible black, spotted with orange ; the bare space round the eye and from thence to the bill black. The iris sea-green. The feet black. The general colour of the plumage is blackish-green, with silky lustre ; the imbricated feathers of the

back and wings of a lighter tint, and margined with velvet-black. The primary quills and the tail-feathers greyish-black.

Length to end of tail 29 inches; extent of wings 42; wing from flexure $10\frac{1}{2}$; tail $5\frac{1}{2}$; bill along the ridge $2\frac{1}{2}$; along the edge of lower mandible $3\frac{1}{2}$; tarsus $2\frac{3}{4}$; first toe 1, its claw $\frac{5}{12}$; second toe $1\frac{8}{12}$, its claw $\frac{6}{12}$; third toe $2\frac{1}{2}$, its claw $\frac{7}{12}$; fourth toe $3\frac{9}{12}$, its claw $\frac{6}{12}$.

FEMALE IN WINTER.—The female is similar to the male.

Length to end of tail 26 inches; extent of wings 38; tarsus $2\frac{1}{2}$; outer toe and claw $3\frac{3}{4}$.

VARIATIONS.—Individuals vary considerably as to size, but otherwise very slightly; the largest measuring thirty inches in length, the smallest twenty-five. The following are some of the dimensions of seven individuals.

	M.	M.	F.	Y.	Y.	Y.	Y.
Length	29	30	25	$26\frac{1}{2}$	29	$28\frac{1}{2}$	26
Extent	42	42	38	36	40	38	—
Bill	3	$2\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{1}{2}$	$2\frac{1}{2}$
Gape-line	—	$3\frac{1}{2}$	—	—	$3\frac{9}{12}$	$3\frac{7}{12}$	$3\frac{9}{12}$
Wing	—	$10\frac{1}{2}$	—	—	$10\frac{1}{2}$	$10\frac{1}{2}$	$10\frac{1}{2}$
Tail	—	$6\frac{1}{2}$	—	—	$5\frac{1}{2}$	5	$5\frac{1}{4}$
Tarsus	$2\frac{1}{4}$	$2\frac{1}{4}$	2	2	$2\frac{4}{12}$	$2\frac{3}{12}$	$2\frac{1}{12}$
Outer toe & claw	$4\frac{1}{4}$	$4\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{1}{4}$	$3\frac{1}{12}$	$4\frac{2}{12}$	$4\frac{1}{4}$

In adult individuals I have not seen much difference in colour. One now beside me has a single white feather in the crest. In some the shafts of the quills and tail-feathers, as well as their webs, are undulated, or marked with transverse lines, as in *Plotus Anhinga*, although much less distinctly.

CHANGES OF PLUMAGE.—The moult takes place in the end of summer, and is completed in October. In spring, as early as March, a partial moult takes place, when there is formed on the head, a little behind the level of the eye, a tuft, broader than long, of elongated, recurved, oblong feathers, nearly two inches in length. No other change is apparent, the colours of all the parts remaining as before. In summer,

the upper parts become of a lighter tint ; and the tail-feathers are usually much worn at the end.

HABITS.—The Crested Cormorant, which is generally distributed along our coasts, and very abundant in many parts of Scotland, especially the western and northern islands, is, like the other species, a constant inhabitant, frequenting the caves and fissures of the rocky headlands and unfrequented islands. It reposes at night in these caverns, or on shelves of the rocks, often in great numbers, being of a social disposition, but keeping apart from other birds. Its roosting places are always rendered conspicuous by the great quantity of white dung with which they are crusted. It is pleasant to see them emerge from their abodes on some wild coast before sunrise, and silently wing their way in files toward their fishing-grounds. They fly low, with uninterrupted beats of their wings, keeping at an inconsiderable height, and scarcely ever crossing an isthmus, however narrow. On arriving at some sandy bay, or shallow straight, they alight in succession, coming heavily upon the water, shake themselves, and commence their search by immersing their heads. On perceiving an object, the Scart darts forward in a curve, rising out of the water, and then plunging headlong. Its agility in this element is astonishing, and it often remains submersed from one to two minutes. Its food consists of small fishes, such as the young of *Gadus carbonarius*, which are extremely abundant on all our northern coasts. It is not nearly so shy as the Great Cormorant, and I have seen it pursuing its prey almost in the immediate neighbourhood of many persons who were fishing with small nets for the fry above named ; but yet in such cases it keeps deep in the water, and is easily frightened away. The habits of this bird are so similar to those of the last, that I cannot avoid repetition in describing them ; and therefore, to give some variety, I shall here introduce from my note-book of 1818, the short notice which I then thought sufficient for the purpose :—

Pelecanus Graculus, Scart, Scarbh. Inhabit the maritime caves of the Hebrides, to which they resort in vast numbers. In the morning, they may be seen at South Town,

in Harris, covering the sea to a considerable extent, on their passage from the caves of Liuir and Toe-head to their fishing-stations in the sound. I have counted a hundred and five in one flock, and the number exceeded this considerably, as many were under water at the time. The nest is composed of sea-weeds, heather, and various materials picked up on the water, and clumsily put together. The eggs two or three, bluish-white, sub-elliptical, very narrow in proportion to their length. May and June: The young are for some weeks covered with black down. While commencing the act of diving, they rise with a spring entirely out of the water. Though very rank and dark-coloured, the flesh is eaten by the poor people here. The young are delicate, and previous to being fledged, have not the fishy taste of the full-grown birds.

Brief and abrupt as this must appear, it will afford us a text. There is a large cave on the west coast of Harris celebrated for the number of Scarts which reside in it, and so lofty that a boat can enter to a considerable distance without having the masts taken down. I have several times visited it for the purpose of shooting the birds in the breeding season, when they had numerous nests on its sides. When we appear off the mouth of the cave, we see a considerable number of Scarts conspicuously perched on the little shelves and projections, their dusky figures strongly relieved by the whitened surface of the rock. Some of them fly overhead as we approach, but more drop into the water like a stone. On looking down, we see them rapidly wending their way under the boat, flying with outspread wings, and not at all in the manner represented by some, who say that this bird propels itself under water entirely by the feet and tail. Of this I am certain, having been an eye-witness of the fact. Glancing aloft, we see many Black Guillemots in the clefts, and above them the eyrie of the White-tailed Sea-Eagle; but our business is with the Scarts, which, now alarmed, are seen writhing their long necks as they gaze upon us. Presently a shot is fired—another; the dead birds drop on the water, the living plunge headlong into it, many advance on wing, but, being frightened by the upraised oars, dart into the water

Advancing a little, we find that many still remain on the rocks, and of these we shoot some more. Presently some of those which had escaped return and perch; and thus we continue shooting until we have obtained as many as we desire. After all the uproar, several still remain standing near their nests, so loth are they to quit them. Although most of the nests are beyond reach, some are accessible. We find them generally bulky, but sometimes very scanty, formed of fuci, twigs, heath, and grass, rudely put together, nearly flat, or with a shallow cavity, containing two, frequently three, sometimes four eggs, never more. The eggs are generally soiled by the feet of the birds, like those of the Gannet and Grebes. In some of the nests are young birds in various stages. At first they are bare all over, and of a purplish-black colour. Presently, however, they are covered with brownish-black down, soft, but not close, and leaving the head, part of the neck, and the abdomen bare. Then the feathers gradually sprout, the birds rapidly increase in size, and in seven or eight weeks are fledged. They are at first fed with half-digested fish disgorged by their mother, and at length becoming very plump, are esteemed delicate food by the Hebridians. I have eaten a portion of one, but did not relish it, and the flesh of the adult bird is much worse.

To one of these caves is a narrow passage from the land. I have often crept into it, and advancing stealthily, have seen eight or ten Scarts below, at the distance of a few yards, brooding over their eggs or young, or standing beside them. On the arrival of their mother, the young open their bills wide, stretching up their necks with a wriggling kind of motion, and receive their food from her mouth. The nest, as well as the rocks around, is covered with white dung, and a disagreeable stench, as of putrid fish, emanates from them. The Rock Pigeons frequently, and Starlings sometimes, roost and nestle in these caves. On my shouting, these birds instantly flew off; but the Cormorants remained standing, in a state of great anxiety, until I showed myself, when they would take wing, leaving their young at my mercy. They soon returned, however, and on my again hiding, forgot their alarm. Many little things are neglected on such occasions,

however keen the observer may be ; and I have now to regret that I can say nothing with certainty as to the cries of either young or old.

Although most of them repose in the caves and fissures all the year, many, after the breeding season, roost on the shelves of rocks. Sometimes, during very severe storms in winter, when the sea is so agitated as to prevent a bird from seeing into it, they remain at home all day ; but this seldom happens, even on the most exposed parts of the coasts, as the creeks and little bays present smoother water. It does not appear that this species often visits lakes or rivers. Nor is it ever met with far out at sea, its favourite fishing-stations being the eddies of channels, bays, and estuaries. Great numbers frequent particular low rocks or insular crags, for the purpose of resting at some period of the day, generally between ebb and high water. There they preen themselves, spread out their wings in the sun or wind, and repose in a standing posture, with contracted neck.

In dry weather, I have often seen individuals of this species, while swimming, erect themselves in the water, and spreading out their wings, remain in that posture for a long time. On the rocks, and sometimes on low islands and sand-banks, it is common enough to see them with all their broad funereal banners spread out. Although not so shy as the Great Cormorants, they seldom allow a boat to come within shot on such occasions ; and while engaged in fishing, they cannot often be obtained, on account of their vigilance, and the extreme rapidity of their movements. On being fired at, or otherwise alarmed, they always dive, and reappear at a distance. They rise heavily from the water, striking it with their feet and wings to a considerable distance, and in alighting on it, or on the rocks, they come down abruptly. On land they move clumsily, being incapable of walking effectively. Indeed, the roosting-places of many of them do not present a surface of a foot square, and they never alight elsewhere unless for the purpose of resting. Toward evening, when their labours are finished, they may be seen wending their way in silence over the sea, generally near the coast, and in strings, to their roosting-places.

This species is much more numerous in Scotland than in England, and in the northern than in the southern parts of the former. The following account of its habits in the Shetland Islands has been sent to me by Dr. Edmondston :—
“ *Pelecanus Graculus* is remarkably numerous in this country. It is not migratory here more than I believe it is anywhere else. Although of great power on wing, and one of the most expert divers, it is never seen but near the coast, so much so that seamen acquainted with the fact, in approaching this coast, in thick weather, regard the appearance of Shags as an infallible indication of the land being very near. Their food consists chiefly of young coal-fish, among which they commit great havoc. Their time of fishing is chiefly at ebb. Their constant mode of diving is by a spring out of the water. Neither this species nor the *Carbo* use their wings under the water in the manner of the Guillemots and Ducks for instance, but throwing their powerful webbed feet together as a seal does his hind paws, they use them as a fish does its tail, and dart forward with great velocity. This species is subject to epidemics, which occasionally greatly reduce its numbers. It is neither so easily tamed nor so sagacious as the Cormorant. Both must be fed on fresh fish alone, rejecting even when hungry every other ; and under any circumstances they will not thrive without it. Their tenaciousness of life is not so great as that of most other diving birds. The male is the largest, and his plumage is of a more glossy black. In summer he rests on a ledge of rock near the nest, but does not seem to have any share in incubation or in feeding the young. The female is a perfect pattern of maternal affection, and will often expose herself to several gun-shots rather than desert her charge. The eggs and young are from three to five, generally four. The young birds are good eating. The eggs deserve all the execration which Pennant says even the Esquimaux bestow on them. I hardly ever have seen it in fresh water. This bird in its perfect state of plumage is, I believe, what has more recently been termed *Pelecanus cristatus*. I can perceive no just reason for making it another species. The Shag is more gregarious than the Cormorant.”

It is equally abundant in Orkney, according to Mr. Low, who says he has "observed sometimes five hundred in a flock, especially where they had fallen in among a shoal of small fish. Our Hoy men and other rock-men tell us they sit in very large flocks on the rocks, and one keeps watch while the rest are asleep. If they can catch the watcher, they are sure of the whole; but if he gives warning, they all throw themselves over the rock into the sea. The rock-men go in the night-time to the places where they frequent, and catch many of them as above." On all the rocky shores of Scotland, its breeding-places are to be seen here and there; yet large tracts of coast occur on which none are to be seen. Thus, the shores of the Moray Frith, a great part of the coast of Morayshire, the coast from Peterhead to Aberdeen, from Arbroath to Dundee, and thence to Stirling, Leith, and Aberlady, produce very few. On the Bass Rock and on the coast to the southward it breeds in considerable numbers, as well as on the east coast of the north of England. Beyond the Humber to Devonshire it is scarcely met with breeding; but from Cornwall to the Solway is plentiful in favourable places, and from thence to Cape Wrath and the Butt of the Lewis there is no lack of Scarts.

From the most northern parts of Europe, including Iceland and Ferøe, it is said to extend to the Mediterranean; but it has not been met with on the coasts of America, where its place is occupied by a very similar species, *Phalacrocorax dilophus*.

I have only to add that the eggs vary greatly in size as well as in form. Some are extremely narrow, others of considerable breadth; but their general form is not elliptical, but oval, one end being always decidedly smaller, and sometimes even pointed. The length varies from two inches and seven-twelfths to two inches and three-twelfths; the breadth from an inch and seven-twelfths to an inch and five-twelfths.

YOUNG.—The young, at first of a purplish-black or livid tint and bare, are soon covered with brownish-black down. When fledged they have the upper parts greenish-brown,

the lower greyish-brown, with the throat and part of the breast inclining to white. The imbricated feathers of the upper parts are not margined with a villous band as in the adult, the tips of the filaments being glossy and of a brownish colour, terminated with pale brownish-grey. The lower mandible and the sides of the upper are brownish-flesh-colour, with transverse dusky markings, the ridge brown. The feet blackish externally, but inclining to flesh-colour on the inner side.

PROGRESS TOWARD MATURITY.—In their first winter the young are as follows:—The bill very slender, dusky brown above, brownish-flesh-colour on the sides and beneath, with faint dusky markings on the lower mandible. The feet black externally, dusky brown internally; the claws black. The membrane of the lower jaw orange, the skin at its base yellow, around the eye dusky. The upper part of the head greenish-brown; the hind-neck of a darker green; the middle and hind parts of the back as in the adult, but with a tinge of blue; the imbricated feathers dark green, with the margins still glossy, but deep black; the primary quills and tail-feathers brownish-black, with a tinge of grey. A small part of the throat is greyish-white; the fore-neck and breast greenish-brown; the hind parts and sides darker and blackish-green. At this period the bill appears to have attained its full length; but being very slender, contrasts so with that of the old birds, that it seems at first sight to belong to a different species. The nostrils are closed by the time when the young is fully fledged.

REMARKS.—A bird very nearly allied to this, named *Phalacrocorax Desmarestii*, has been described by M. Temminck and figured by Mr. Gould; but the former naturalist finally remarks that, having compared specimens with those of *Phalacrocorax cristatus* from Iceland and Feroe, he thinks the southern bird the same, the only difference being that the young of the year have more white beneath. If Mr. Gould's figure be correct, the species, however, must be distinct; for among the great numbers of Crested Cormorants

which I have examined, none had the bill so very slender ; and those in which it was remarkable in this respect were young birds, whereas the individual figured is an adult.

It is quite clear that, however imperfectly Linnæus characterized his *Pelecanus Graculus*, he could have meant no other species than this, as he refers to Willughby and Ray, and states that it is a European bird. The presence or absence of the crest, and the difference in colour between old and young individuals, rendered the knowledge of the Cormorants extremely imperfect so long as ornithology remained chiefly in the hands of the learned, and thus the greatest confusion prevailed ; but since the species have been accurately examined and described, we may with propriety resume the Linnæan name. *Cristatus*, the term applied to the present species by M. Temminck, is the least eligible of all names, as almost every species of the genus is crested ; and *minor*, employed by Brisson and others, answered only so long as two species were all that were known. M. Temminck has given the name of *Graculus* to another species, certainly not the Linnæan, and which he says is common to Europe and America, although none of the ornithologists of the latter continent have ever met with a bird corresponding to his description. Latterly he informs us that its true country is America. It appears to me that this bird can be no other than *Phalacrocorax dilophus*.

SULA. GANNET.

THE Gannets, although essentially organised like the Cormorants, are in many respects very different from them in external appearance, in the proportions of their parts, and in their habits. Their body is of an oval, rather elongated form ; the neck of moderate length, and very thick ; the head large.

Bill longer than the head, opening beyond the eyes, conical, moderately compressed ; upper mandible with the ridge very broad, convex, separated by grooves from the sides, which are slightly convex, and erect, with a slender additional piece at the base, the edges sharp, direct, irregularly jagged with numerous small incisions directed backwards, the tip a little decurved, compressed, and rather acute ; lower mandible with the angle extremely long and narrow, the sides convex, the edges direct, sharp, and jagged, the tip compressed and acute. There is a small gular sac, of which a part is bare.

The mouth wide ; the palate flat, and ridged. Tongue extremely small, obtuse ; œsophagus extremely wide, much dilated at the lower part ; the proventricular glands form a broad belt, partially divided. Stomach extremely small and thin ; intestine of moderate length, slender, with very small cœca.

Nostrils obliterated. Eyes rather small, surrounded and preceded by a bare space. Aperture of ears small. Feet short, placed rather far behind ; tibia concealed ; tarsus very short, sharp behind, scaly, with three lines of small scutella continued on the toes. First toe rather small, directed inwards and forwards, third toe longest ; all connected by membranes ; claws slightly arched, that of the third pectinate on the expanded inner edge.

Plumage dense, on the head and neck blended. Wings very long, narrow, acute. Feet rather long, graduated.

Species of this genus occur in both hemispheres. They fly at a moderate height, with a steady motion, and, on discovering their prey in the water, plunge headlong after it; on emerging rest a little, and then fly off to renew their search. They never swim about in searching for food, and are seldom to be seen resting on the water.

SULA BASSANA. THE COMMON GANNET.

SOLAN GOOSE.

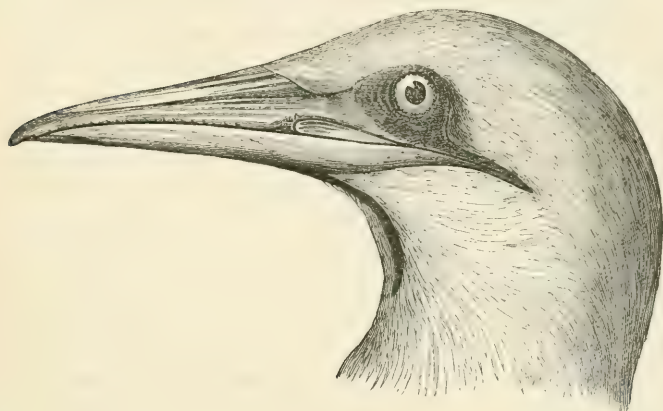


FIG. 86.

Pelecanus bassanus. Linn. Syst. Nat. I. 219.

Pelecanus bassanus. Lath. Ind. Ornith. II. 891.

Fou blanc. *Sula alba.* Temm. Man. d'Ornith. II. 905.

Gannet. Mont. Ornith. Dict. and Suppl.

Solan Gannet. *Sula bassana.* Selby, Illustr. Brit. Ornith. 420.

Sula Bassana. Jenyns, Brit. Vert. Anim. 263.

Bill bluish-grey; bare parts about the eyes and bill blackish-blue; plumage white; head and hind neck light yellowish-red; primary quills brownish-black. Young dusky, each feather tipped with a small triangular white spot.

MALE IN SUMMER.—The Common Gannet is a large and strongly-constructed bird, having the body of a rather elongated compressed oval form; the neck of moderate length and great thickness; the head large and roundish. Bill longer

than the head, opening to beyond the eyes, straight, of an elongated, conical form, moderately compressed, slightly deflected at the tip. Upper mandible with the dorsal outline straight and declinate, at the end a little decurved; the ridge very broad, convex, separated on each side by a groove from the sides, which are nearly erect, slightly convex, and are jointed at the base to a narrow supplemental piece placed below the eye; the edges sharp, direct, irregularly-jagged with numerous slender fissures directed backwards; the tip a little decurved, compressed, and sharp-edged, but rounded horizontally. Lower mandible with the angle very long and narrow, the dorsal outline straight and ascending, the sides erect and convex, the edges sharp and direct, the tip compressed and acute. A bare membrane extends from between the crura of the lower mandible, down the throat, narrow, and ending acutely. A membrane round the base of the bill, occupying also the loreal spaces, and surrounding the eyes.

The tongue presents the appearance of a small oblong, posteriorly emarginate knob, a quarter of an inch only in length. There are five sharp ridges on the roof of the mouth. The nasal aperture is an inch and a half in length, linear, with a soft longitudinal flap on each side. The aperture of the glottis seven-twelfths long, with the edges smooth, and having behind two transverse curved smooth edges. The œsophagus fifteen inches long, to the proventriculus, which is three inches in length. It is extremely wide, nearly uniform in diameter, dilatable to four inches, but when moderately inflated about two inches wide, and half an inch less at its entrance into the thorax. Its inner coat is smooth and even, but when contracted forms strong longitudinal plaits. The proventriculus two and a half inches in width, but dilatable to four and a half; its glandules oblong-cylindrical, three-twelfths long, disposed in two roundish masses, separated by one interval of about five-twelfths. The stomach is, comparatively, very small, being only an inch and three-fourths in length, and nearly of the same breadth; its muscular coat very thin, with two small roundish tendons, about three-twelfths in diameter. The mucous coat is very soft and smooth, with several large gastric crypts. The pylorus has a

semicircular thickened rim above, and a two-lobed valve below, having a similar thickened margin. The intestine is five feet five inches long, its width in the duodenal portion seven-twelfths, diminishing to four-twelfths. The cœca, which are placed at the distance of five inches and a half from the anus, are half an inch in length. The intestine is arranged in seven double folds, lying obliquely, and gradually diminishing.

The nostrils are completely closed, their places being only indicated by some rugæ. The eyes of moderate size. The apertures of the ears very small, being only two-twelfths in diameter. The feet short, strong; the tibiæ concealed; tarsus very short, rounded before, sharp behind, covered at its upper part anteriorly with roundish flat scales, elsewhere with very small oblong tubercles; anteriorly, three lines of small transversely-oblong scutella run down to be continued on the toes. The first toe rather small, directed inwards and forwards; the third toe longest, but the fourth almost equal; the membranes full, minutely tuberculate. Claws moderate, slightly arched, the third with its inner side incisolate.

Plumage close, compact; on the head and neck rather long and blended. Wings long, very narrow, acute; primaries strong, tapering rapidly to a rounded point; the first longest, the rest rapidly graduated; secondaries very short, rather broad, rounded with a minute tip. Tail rather long, graduated, of twelve straight, stiff feathers, those in the middle acute, the rest moderately rounded.

Bill pale bluish grey, the lines on the upper mandible blackish-blue, as are the bare spaces about the eyes, and that on the throat. Iris bluish-white. Feet deep brown, the lines of scutella apple-green; the claws bluish horn-colour. The general colour of the plumage is white; the head and hind neck pale reddish-yellow; alula, primaries, and first secondary brownish-black, their shafts white toward the base.

Length to end of tail 36 inches; extent of wings 70; wing from flexure 20; bill along the ridge 4, along the edge of lower mandible 6; tarsus $2\frac{1}{4}$; first toe and claw $1\frac{1}{4}$; middle toe and claw $4\frac{3}{4}$.

FEMALE.—The female is similar to the male.

Length 33 inches; extent of wings 67; bill along the ridge $4\frac{2}{12}$; tarsus $2\frac{3}{12}$; middle toe and claw $4\frac{2}{12}$.

The above descriptions are from a very fine male shot on the Bass, by Mr. De Jersey, in the beginning of May 1824, and a female from the same place, examined in July of the same year. The digestive organs, however, are described from a male shot on the Bass in August, 1836.

HABITS.—Gannets appear to be constantly resident on the coasts of Britain, though they change their stations, and may disappear entirely at one season from a place which they had frequented in another. In winter they are often to be seen in the Channel, and even among the Orkney Islands, and I have seen some in the Firth of Forth in the beginning of February. It is not, however, until they resort to their breeding-places that they attract much notice, and then they are all day long to be seen, often in great numbers, dispersed over the surrounding seas to the distance of fifty or more miles. Their breeding-stations are not numerous, however, those mentioned by observers being, on the west side of Britain, Lundy Island, on the coast of Devonshire; Ailsa Craig, off Ayrshire; St. Kilda, to the west of the Outer Hebrides; Suliskerry, between the Butt of the Lewis and the Orkneys; and on the east coast of Scotland the Bass Rock, in the Firth of Forth. It is in the latter station that I have made most of my observations on this bird.

The Bass is an abrupt rock, having a basis of about a mile in circumference, and of an oblong form. The cliffs are perpendicular in some places, overhanging in others, and everywhere precipitous, excepting at the narrow extremity next the land, where, sloping less abruptly, they form at the basis a low projection, on which is the only landing-place. Above this are the ruins of the fortifications and houses, the Bass having formerly been used as a state prison. The rocks are in some places apparently two hundred feet in height, and the summit, towards which the surface rises in an irregular manner, is probably a hundred and fifty feet higher. In as far as I have observed, the whole mass is of a uniform struc-

ture, consisting of trap, intermediate between greenstone and clinkstone, with an uneven fracture, approaching to conchoidal, sometimes splintery; glimmering lustre; dull brownish-red colour, with specks of dull pale green interspersed; and small granular structure. It is scratched by the knife without difficulty, tough and hard under the hammer. The seams have a dark red, rusty appearance, sometimes tinged with dull brownish-black. Felspar and augite are the constituent minerals, the latter in small quantity. The lustre and texture are similar to those of the rock of North Berwick Law, but the colour of the latter is greenish-grey, with interspersed patches of reddish-brown.

Although a great portion of the upper surface of the island is composed of rock, there is an abundant vegetation, consisting chiefly of *Festuca ovina*, *F. duriuscula*, and a few other grasses, mixed with plants usually found in maritime situations. Among other species, the following were observed by me:—*Silene maritima*, *Cochlearia officinalis*, *Plantago Coronopus*, *Lychnis dioica*, *Geranium molle*, *Statice Armeria*, *Draba verna*, *Urtica dioica*, *Rumex crispus*, *Sonchus oleraceus*, *Leontodon Taraxacum*, *Vicia lathyroides*, *Viola canina*, *Bellis perennis*, *Lycopsis arvensis*, *Myosotis collina*, *Cerastium semidecandrum*, *Luzula campestris*, *Bromus mollis*, *Aira præcox*, and, lastly, *Lavatera arborea* and *Beta maritima*, the two latter growing in great abundance among the ruins, which harbour great numbers of *Helix aspersa*.

But the circumstance connected with the Bass most interesting to the zoologist, is its being one of the few places in Britain to which the Gannet resorts during the breeding-season. The number which I saw on the 13th May 1831, when I for the first time visited it along with some friends, might be estimated at twenty thousand. Every part of the mural faces of the rock, especially towards their summits, was more or less covered by them. In one spot near the landing-place, about forty yards in circumference, and on a gentle slope of gravelly ground, about three hundred individuals were sitting in peaceful security on their nests.

The Gannets arrive about the middle of February or the beginning of March, and depart in October; some years, a

few individuals remain during the winter. The nests are composed of grass and sea-weeds, generally placed on the bare rock or earth, elevated in the form of a truncated cone, of which the base is about twenty inches in diameter, with a shallow terminal cavity. On the summit of the island are numerous holes in the turf, formed by the Gannets in pulling away grass and turf for their nests. They are placed in all parts of the rocks where a convenient spot occurs, but are much more numerous towards the summit. Some of them on the face of the rock, or in a shallow fissure, and which have been occupied for years, are piled up to the height of from three to five feet; but in this case they always lean against the rock. The egg, which is solitary, and presents nothing remarkable in its position, is of an elongated oval form, white, dull, with a chalky surface, usually sullied or patched with yellowish-brown dirt. It is subjected to what might appear rough usage, for the bird in alighting, flying off, or when disturbed by the intrusion of human visitors, tosses it about, and often stands upon it. All the movements of the Gannet on land are very awkward: it hobbles and waddles when it tries to walk, stares at you with its goggle, white eyes, opens its ugly black throat, and emits a torrent of crackling sounds.

When sitting, the Gannets usually allow a person to approach within three feet, sometimes much nearer, so that one may even touch them. When one approaches them, they merely open their bill, and utter their usual cry, or they rise on their feet and express some degree of resentment, but seem to have very little apprehension of danger. They take advantage of the absence of their neighbours to pilfer the materials of their nests, frequently two join in the act, and occasionally two may be seen tugging at the same bunch, endeavouring to wrest it from each other. They are constantly repairing their nests, which being composed in a great measure of sea-weeds, shrink up in dry weather and decompose in wet; and when seated close together they have frequent quarrels. I saw one seize its neighbour by the back of the neck, and hold fast, until the assaulted bird, I may say, roared out; but in general they are satisfied with menac-

ing each other with their open bills and loud clamour. In leaving the nest they generally scatter about a quantity of the materials of which it is composed, for they are extremely awkward in their motions when on the ground, hobbling and limping along, aiding themselves with their wings, and dragging the abdominal feathers and tail.

In launching from the cliffs, they frequently utter a single plaintive cry, perform a curve, having its concavity upwards, then shake the tail, frequently the whole plumage, draw the feet backwards, placing them close under the tail, on each side, and cover them with the feathers. In some the feet were entirely covered, while in others parts of the toes were apparent. In flying, the body, tail, neck, and bill, are nearly in a straight line, the wings extended, and never brought close to the body, and they move by regular flappings, alternating with short sailings. In alighting, they generally ascend in a long curve, keeping their feet spread, and come down rather heavily, often finding it difficult to balance themselves, and sometimes, when the place is very steep, or when another bird attacks them, flying off, to try it a second time. On the rocks they stand with the body nearly horizontal, or they lie on their belly, although some may be seen in an oblique or nearly erect posture. They usually repose with the head resting between the shoulders, the bill concealed among the feathers of the back. I caught one in that state, by walking up to it, and seizing it by the tail and the tips of the wings, which cross each other over it.

Owing to their so often interfering with each other, a constant noise is kept up amongst them. Their cry is hoarse and harsh, and may be expressed by the syllables carra, carra, or kirra, kirra, sometimes it is crac, crac, or cra, cra, or cree, cree. The cry varies considerably in different individuals, some having a sharper voice than others, and when unusually irritated they repeat it with great rapidity.

The young are at first covered with very beautiful close snow-white down; at the age of about six weeks the feathers make their appearance among the down; when about two months old the birds are pretty well fledged, and at the end of three months they are able to fly. The old bird at first

feeds the young with a kind of fish soup prepared in its gullet and stomach, and which it introduces drop by drop, as it were, into its throat. But when its nursling is pretty well grown, it places its bill within its mouth, and disgorges the fish either entire or in fragments. They never carry fish to the rock in their bills. The smallest number of young killed in a year is a thousand, the greatest two thousand ; but in general the number is fifteen or sixteen hundred. After being plucked they are sold at from ninepence to a shilling each. The price of a young bird for stuffing is two shillings, of an old bird five, of an egg one. For the information contained in this paragraph I am indebted to the keeper or farmer of the rock, of whom, however, I did not think of asking to whom the birds were sold.

At the period of my second visit, with Mr. Audubon, on the 19th of August 1835, the nests in most places had almost entirely disappeared ; for it is only during incubation that the birds keep them in constant repair. The young were in various stages, a few quite small and covered all over with white down, the greater number partially fledged, with the down remaining on the head and neck, and some nearly ready to fly, and having merely a few tufts of down on the hind-neck. The young lay flat, either on the remnants of their nest, or on the bare rock or ground. They are very patient and uncomplaining ; in fact, none uttered a single cry while we were inspecting them. I observed an old bird, with its own young one beside it, squeeze the neck of another youngling with considerable force. The poor bird bore the persecution with perfect resignation, and merely cowed under the bill of the tyrant. The young of the latter also attacked its neighbour, but was instantly checked, on which it meekly desisted. One of the men informed me that last year there were fourteen nests, each with two eggs. In such cases one of the young is said to be much smaller than the other.

Having visited one of the most celebrated of the breeding-places of the Gannets, let us now observe their habits at a distance from their retreat. In the Outer Hebrides they are to be seen, soon after sunrise, coming in strings of from three or four to twenty or so, from the Atlantic, and wending their

way up the sounds, generally along the shore. They fly steadily, and with considerable rapidity, moving in a uniform manner, without undulations, by means of rather quick motions of the extended wings, which are never brought against the sides. They proceed to great distances, many of them going as far as the coasts of Skye, others dispersing along the western and eastern shores of the Long Island. When they reach the places where they are accustomed to fish, they slacken their flight, move backwards and forwards along the coast, at a height of from fifteen to thirty feet above the surface of the water, now and then dart down to seize a fish, and, rising again, pursue their occupation. When the wind is high, and beats against a rocky promontory, one may in favourable situations have good shooting, for in doubling the cape they come very close upon the rocks. In the evenings, before sunset, they are seen retiring westward in strings, with the same rapid and steady motion as in the morning.

The Gannet never swims continuously on the water, although it floats there buoyantly, nor is it capable of diving from its surface. When, in flying about in search of food, it perceives a fish, it suddenly turns, and descends headlong, with such force as to leave, where it has disappeared, a spot covered with foam, as if a large stone had fallen from a great height into the sea. It rises in a few seconds, and so light and buoyant does it seem that in emerging it nearly springs out of the water. It then rests a few moments on the surface, and taking wing, ascends to renew its search. It rises heavily, however, making a splutter with its wings for several yards, before it gets fairly on wing. A common opinion, even of those who see it daily, is, that on perceiving a fish, it immediately throws itself on its back, and so darts down. I have often closely watched its motions, but never observed this reversion, although it certainly does take an abrupt turn in certain cases, as when a fish glances in the water at some distance behind it, or on either side, and then, in executing a sudden turn or oblique motion, it seems to turn upon its back, as I have frequently observed. It very seldom flies across a neck of land, but doubles the point. I saw an instance, however, where one had ventured across an isth-

mus nearly half a mile in breadth. Unfortunately for it, an eagle that happened to be flying past, observed it, and struck it down. It was taken up dead by some people near the place and brought home.

When it meets with a shoal of herrings it gorges excessively, so as sometimes to be unable to rise from the water for a time. Crossing from Lewis to Polleu, on the mainland, in the summer of 1821, I sailed over a dense shoal, in the midst of which were numerous Gannets, some of which seemed unable to rise, while the rest were voraciously feeding. It was remarkable that even here, where the fishes were so crowded as to cause a ripple on the surface, the birds did not pick them up as they sat among them, but first rose in the air and then darted upon them in the usual way, frequently plunging before rising to the height of half a dozen feet. On another occasion, however, 8th August 1840, I saw a Gannet in the Firth of Forth, descend among herring fry, not in the usual manner, but like a Gull; it hovered over the shoal, and picked up the fishes. In the middle of summer there seems to be an annual mortality among them in the Hebrides, many being then found dead on the water, and others, on being taken up, are found to be much emaciated.

The Gannet may be caught by laying a herring on a piece of wood, and dragging it after a boat, with a long cord fastened to it. The bird descends, and either dislocates its neck by the shock, or transfixes the board with its bill, and is thus captured. The late Mr. Macneil of Lingay informed me that being once on his way to St. Kilda, of which he was tacksman, in a large open boat, he was once startled by the sudden descent of a Gannet upon a piece of flesh suspended within the gunwale. The force with which the bird came down was so great as to drive its bill through the plank.

The following statement by Mr. John MacGillivray refers to the most celebrated of all the breeding-places of this bird:—"The Gannet, or Solan Goose, *Sula alba* (*An sulair*), is to be seen in vast numbers about St. Kilda, from whence a portion of them take their departure every morning to fish in the bays and channels of the Outer Hebrides, the nearest of which is about fifty miles distant. I have even seen them in

Dunvegan Loch, in the Isle of Skye, about ninety miles from St. Kilda, to which I have no doubt they all retire at night. In fact, long strings of Gannets may be seen on the approach of evening winging their way westward. This bird is apparently very select in the choice of its breeding-places, which it occupies to the exclusion of every other species. None are to be found in Hirta, but the island of Borreray is almost exclusively occupied with them, as are also the adjacent rocks Stack Ly and Stack Narmin. The two latter, remarkable for their pointed summits and great height, along with portions of Borreray, appear even from the distance of many miles as if covered with snow, this deceptive appearance being caused by the myriads of Gannets with which the rock is thickly covered, as well as the clouds of these birds passing and repassing in the neighbourhood of their nests. The young birds are fledged in August if the produce of the first laying, but not till September if the first egg has been taken away, as it always is in spots of easy access. The ascent of Stack Ly, a rock which seems absolutely inaccessible, is considered the greatest of all the dangers to which a St. Kildian can expose himself. Only a single man can land at a time, and that only in fine weather. Even then there is great danger in a near approach, on account of the heavy swell, which many years ago drove upon the rock the only boat belonging to the island, when all on board, with one exception, perished. A second boat had previously been lost on the same place, but the crew were so fortunate as to effect a landing, and were taken off the island a few days after by a boat from Harris, sent to collect the rent. The man who lands first, after scrambling to the top, lowers a rope, by which the rest easily ascend, and commence plundering the nests, throwing down into the sea, to be afterwards picked up, the bodies of the young birds, and such of the old ones as they can secure. The old birds, however, are generally caught in gins, or killed under night when asleep. Great caution is required to prevent any of the Gannets from giving the alarm, in which case the courage and ingenuity of the fowler will be exerted in vain.

Great numbers of Gannets are taken not only in St.

Kilda, but also throughout the Hebrides, by cautiously approaching them in a boat under sail, when gorged with fish and asleep upon the water. It requires great dexterity, however, to succeed in this; and I have often seen it fail, especially in calm weather, or when there is only a slight breeze, the bird being awakened by the noise of the gliding of the boat through the water, and rising on wing, when it invariably disgorges with a loud harsh scream. The pasture on the island of Borreray is nearly destroyed by the Gannets, which have dug great numbers of large deep holes in the turf, to procure materials for their nests, which are composed externally of sea-weed. The latter substance many of them must procure from a distance of sixty miles or more, there not being a sufficiency in any of the St. Kilda isles. In fact, I have seen a Gannet flying, apparently from Harris, with a large quantity of sea-weed in its bill. The force with which the Gannet plunges from on wing in pursuit of a fish is astonishingly great. The following story, illustrating this point, was related to me by more than one person, both in St. Kilda and Harris, and I believe it to be true:—"Several years ago, an open boat was returning from St. Kilda to Harris, and a few herrings happened to be lying in the bottom, close to the edge of the ballast. A Gannet passing over head, stopping for a moment, suddenly darted down upon the fish, and passed through the bottom of the boat as far as the middle of the body, which being retained in that position by one of the crew, effectually stopped the leak until they had reached their destination. The long streak of foam which follows the plunge of the Gannet may be distinctly seen at the distance of more than a mile, when the bird itself is far below the surface, and of course invisible."

The inhabitants of St. Kilda use the young birds as food, and kill vast numbers of the old solely for their feathers, which they give as rent to the tacksman. The gullet, however, is kept as a receptacle for the oil of the Fulmar. The beautiful white down of this bird answers, as well as that of the Swan, for tippets, being left upon the skin after the feathers have been removed.

As already stated, there is generally but a single egg in

the nest. The eggs vary considerably in size, and are more or less crusted with white calcareous matter, under which the colour is pale blue. The form is oval or oval-oblong. One from the Bass measures 3 inches by $2\frac{1}{4}$; another $2\frac{1}{2}$ by $1\frac{1}{2}$; one from St. Kilda $2\frac{1}{2}$ by $1\frac{1}{2}$.

YOUNG.—At first the young bird resembles that of a Cormorant. One, about four days old, from the Bass, seen with Mr. Wilson, on the 20th July 1824, was almost bare; the general colour of the skin dark leaden-blue, deepest on the head, paler and mixed with red (derived from the soil?) on the belly. Down very sparse, pure white. Bill and feet of the same colour as the skin; claws and tip of the bill pale horn-colour. Iris very narrow, whitish.

The down gradually increases. A young bird, about five weeks old, from the Bass, seen with Mr. Wilson, 20th July, 1824, had the bill and bare part of the face and throat, which is very extensive, bluish-black; the iris lightish; the feet brownish-black, the lines paler; the claws light grey, tinged with brown; the whole body covered with very fine, soft, pure white down. It continues thus, the white down becoming longer, until the feathers sprout.

In its first plumage the young is of a dark brown colour above, paler beneath, but all the feathers tipped with white. One from the Bass, examined in August 1831, had the whole plumage deep brown, excepting the under parts, which were paler, and towards the abdomen approaching to whitish; the feathers all tipped with a triangular white spot, excepting the primary quills, primary coverts, alula, and tail-feathers.

It is a very remarkable circumstance that the middle claw, which in the adult is serrated, is quite entire in the young bird, until after it has begun to fly; and that the edges of the bill, which are irregularly serrated in the adult, have no appearance of cuts in the young. A more curious fact still is the entire closing of the external nares.

PROGRESS TOWARD MATURITY.—In the first autumn the plumage changes to a uniform dark greyish-brown on the upper parts, the lower becoming whiter. In the next summer

the plumage of the adult appears, and is completed by the end of the autumn: but individuals examined at different periods are more or less spotted or patched with the one or the other. An individual in the second year, shot on the Bass by W. Stables, Esq., had the bill pale greyish-blue, tinged with greenish; the eyelids light blue; the iris silvery; the bare skin about the eyes livid blackish-blue; the feet brown; the lines dull yellowish-green; the claws pale bluish-grey. The head, neck, and under parts coloured as in the adult; the back of brown and white feathers intermixed; the scapulars and wing-coverts, some deep brown, others white; quills, both primary and secondary, primary coverts, alula, and little primary coverts, brown; secondary coverts, some brown, some white; tail dark brown; upper larger coverts white; the skin light blue; the middle of the mouth dull livid blue.

Length $35\frac{1}{2}$ inches; extent of wings 70; bill along the ridge 4, along the edge 6; tarsus 2; middle toe $4\frac{1}{4}$.

REMARKS.—Although the history of the Gannet is given much more fully above than in any British work known to me, it is yet very imperfect, there being many details of its organization of great interest, but for which I have scarcely space left. The skin, which can be inflated by blowing into a puncture made in it, appears as if connected with the subjacent parts only by shreds and points of cellular tissue. Montagu found, from repeated experiments in the dead bird, that there is a communication between the lungs and cellular membrane covering the greater part of the body, as well as with the whole cavity of the body; but that the skin could not be inflated through the lungs, although air would readily pass in a contrary direction; and there also exists a separation between the cellular sub-cuticular cavities of each side of the body, which prevents their being continuously inflated. The skin is also furnished with a transparent cellular membrane, the cells being regularly perforated close to the base of each feather. At the upper part of the breast is a large bag, which extends some way up the neck, but no opening was discovered into it, although it was found by

inflation to communicate with the cavity of the body and the trachea. Montagu imagines this singular conformation in the Gannet to be intended chiefly for the retention of heat, as well as to give lightness and buoyancy to the bird, and thereby enable it to exist in the midst of tempests, far from land, where it is necessary for it to remain, while in pursuit of its food. It appears, however, much more probable that the singular anatomy of the Gannet is connected with its mode of plunging after its prey.

In dissecting a male bird of the same species from Boston, Massachusetts, I observed, among many other details, some of which are related in the fourth volume of Mr. Audubon's work, the peculiarities above alluded to. "The cellular tissue of the back exhibits vacuities of very large size, intervening between the skin and the muscles: one, at the lower part of the neck behind, being 5 inches in length; another $5\frac{1}{2}$ inches long, extending from the furcula down the humerus; and behind the wings four others, extending to the last rib. Branches from these pass between the muscles, which present the appearance of having been, as it were, dissected. A cell of enormous size covers the side of the abdomen, and another pair run down the middle of it, separated by a partition in the median line. That part of the cellular tissue which adheres to the bases of the feathers is also remarkably loose; and close to each of them is a roundish aperture of large size, communicating with the great cavities mentioned above. Between the pectoralis major and the subjacent muscles is a large interspace, formed by a great cell. The internal thoracic and abdominal cells are also very large."

American specimens have been compared by me with Scottish, both by inspection of the exterior and by dissection, and I have no doubt as to their being of the same species. Mr. Audubon found it breeding on a rock in the Gulf of St. Lawrence, and frequently saw it on the Gulf of Mexico in winter.

I have still to say a few words respecting a Black-tailed Gannet.

Whether Mr. Gould's *Sula melanura* be a good species, or whether the specimen to which I allude belong to it, I

cannot presume to determine from few facts and small data. The bird in question was caught on the Bass in May 1831, and sent to me for description by Mr. Stables.

Apparently adult, and having the general appearance of the Common Gannet. Primaries 10, secondaries 26, tail-feathers 12. The principal differences are the following:—

The bill is shorter, and at the base thicker.

The space from the eye to the base of the bill is shorter.

The black line of bare skin is extended down the neck to more than half its length, whereas in the Common Gannet it is only about 2 inches long.

The secondary quills are dark purplish-brown; white in the Common, but still dark brown in its second year.

The tail is dark brown; white in the Common, but still dark brown in its second year.

Length 36 inches; extent of wings 64; bill along the ridge $3\frac{3}{4}$, along the edge $5\frac{1}{2}$; tarsus $2\frac{3}{4}$; middle toe $4\frac{1}{2}$.

In specimens from the Bass, the dimensions of the digestive organs vary considerably, as in many other species of birds. Thus:—

In an adult male shot in May 1824, and of which the length was 36, extent 70, bill 4, tarsus $2\frac{1}{4}$, toe $4\frac{3}{4}$; the œsophagus 15, intestine 60.

An adult male, 23d August, 1836.—Length 37 inches, extent 72; œsophagus 18; stomach $1\frac{3}{4}$; intestine 64.

An adult male, 8th July, 1837.—œsophagus 15; intestine $60\frac{1}{2}$, of which the rectum $4\frac{1}{2}$; cœca $5\frac{1}{2}$.

An adult female, 8th July, 1837.—œsophagus 14; intestine $61\frac{1}{2}$, of which the rectum $4\frac{1}{2}$; cœca $\frac{6}{1\frac{1}{2}}$.

An adult, 20th July, 1824.—Length 33, extent 67, bill $4\frac{1}{5}$, tarsus $2\frac{2}{5}$, toe $4\frac{1}{5}$.

A second year bird.—Length $35\frac{1}{2}$, extent 70; bill $4\frac{1}{4}$; tarsus 2, middle toe $4\frac{1}{4}$.

The American birds which I have seen were mostly a little larger. Three preserved in rum measured:—Length $38\frac{3}{4}$, $38\frac{3}{4}$, 37; extent 73, 72, $68\frac{1}{2}$. Of one of them, œsophagus $18\frac{1}{2}$, stomach $1\frac{9}{12}$; intestine $58\frac{1}{4}$, of which the rectum $5\frac{1}{4}$; cœca $\frac{3}{1\frac{1}{2}}$.

MERSATORES. PLUNGERS.

AMONG the numerous birds that seek their subsistence in or upon the waters, and are fitted for an aquatic life, by having their toes connected by a thin and pliant induplicature of the skin, converting their feet into paddles, are many, which roaming abroad over the face of the ocean, or following the sinuosities of its shores, pick up their food from its surface, or by plunging or dipping into it, without pursuing their prey into its depths. They are of lighter construction than the other sea-birds, with more plumage in proportion to their bulk, and furnished with wings of large size, generally elongated and narrow, which enable them to perform a more varied and extended flight, and to accomplish with ease the evolutions frequently necessary to them. Sitting lightly on the water, chiefly for repose, they swim with ease, but not with speed at all approaching to that of the diving birds, and none of them are capable of sinking, or propelling themselves into the water, from its surface. Their food consists of fishes, crustacea, mollusca, and other animals, the larger feeding also in the manner of vultures on dead cetacea, land mammalia, and birds. The order is of universal distribution on the seas, many also frequenting fresh water, and even the species extend to vast distances. Enlivening the monotony of the vast expanse, they occasionally cheer the mariner, and afford the wearied passenger to distant lands a little of that amusement which he longs for, but which the deep yields in profusion only to the naturalist, and not always even to him. Without them the coasts would often seem lifeless; and when busy crowds of them are in pursuit of shoals of fishes, or searching the estuaries, they give an animation to the scene, which contrasts with the effect caused by their absence.

Peculiarly erratic, they settle for a time only to rear their young, after which they disperse; yet some are to be seen at every season, in almost every climate, on the barren shores of Iceland, the picturesque coasts of Greece, the luxuriantly-wooded bays of the Indian islands, amidst the floating ice of Nootka Sound, and on the sunny bosom of the Pacific Ocean.

They may be generally characterized as having the body ovate, rather light in proportion to their bulk; the neck of moderate length, or short; the head large, broadly ovate, anteriorly narrowed. The bill of moderate length, generally stout, but often slender, straight, compressed, more or less decurved at the end, and opening to beneath the eyes. The mouth is rather wide, and extensile; the tongue fleshy, tapering, pointed, horny beneath at the end. The œsophagus very wide, its walls thin; the proventricular portion dilated; the stomach small, muscular, with large radiated tendons, and thick, dense, rugose or plicate epithelium; the intestine rather long, narrow, or of moderate width; cœca very small, cylindrical; rectum with a large globose cloaca.

The nostrils are rather large, sub-basal, or medial; the eyes rather small, with feathered eyelids, having crenulate margins. The apertures of the ears of moderate size. The legs never of great length, generally short, rather slender; tibia bare to some extent; tarsus little compressed; toes of moderate length, slender, spreading, webbed, the first very small and elevated, or wanting; claws small, arcuate, rather obtuse. The plumage full, close, and soft; the feathers generally oblong and rounded; the wings very long, rather narrow, much pointed; the tail generally moderate, and mostly of twelve feathers.

The Mersatorial Order, of which any member may be at once recognized, is more homogeneous than the others. It may, however, be divided into a few somewhat distinct families. The PROCELLARIINÆ, of which the greater number of species belong to the southern hemisphere, and of which many are of gigantic or large size, have few representatives with us, and they, with exception of one, among the smallest of all sea-birds. The genera are *Diomedea*, which includes the most celebrated of the sea-birds, the Albatross, *Procel-*

laria, a numerous group, in which are also many large species, Daption, Prion, and Puffinuria, none of which have species in the European seas, Puffinus, and Thalassidroma, of which two of the first, and four species of the last, are reckoned in our Fauna.

The LARINÆ, or family of the Gulls and their allies, none of which approach in magnitude to the Diomedæ and Procellariæ, or are so diminutive as the Thalassidromæ of the last family. Some authors distinguish the LESTRINÆ from the Larinæ, as a family or sub-family, and many unite with them the STERNINÆ, which, however, might, I think, with propriety, be kept distinct. The Larinæ have the bill strong, more or less decurved or declinate at the end; the wings rather broad and somewhat rounded, the tail short or of moderate length; while in the Sterninæ the bill tapers to a fine point, the wings are narrow and acuminate, the tail mostly rather long, and usually forked.

About thirty-five of these birds rank as British. Some are permanently resident, but the greater number migratory. The males are somewhat larger than the females, and generally the sexes are coloured alike; but the young are differently coloured from the adult, being usually mottled with brown. They nestle on the ground or on rocks, laying a few oval spotted eggs; but some lay in holes, and have white eggs. The young, densely covered with down, are active from the first; but, unless annoyed, seldom remove from the nest until they are able to fly. The flesh of these birds is not esteemed as food; nor are they in any way of much evident utility to man.

PROCELLARIINÆ.

PETRELS AND ALLIED SPECIES.

THE Procellariinæ, some of which are of gigantic, and others of very diminutive size, are oceanic birds, of which no general definition has been given by any author known to me. It is very easy to inform us that the mariner meets with them far from land, and that ornithologists are now pretty well agreed as to the forms that ought to be included in the group, or to present a long survey of heterogeneous and discordant opinions on the subject ; but the question with us is, what are the Procellariinæ ?

They are mersatorial birds distinguishable by a peculiarity in the disposition of their nostrils, which are more or less tubular and dorsal, and still more by an enormous dilatation of the proventricular portion of their œsophagus, which, when filled, occupies by far the greater part of their abdominal cavity. Any bird presenting these two characters may be at once referred to the Procellariinæ.

Otherwise, they differ from each other in size and proportions ; but may be generally described as having the body ovate ; the neck of moderate length ; the head rather large ; the bill not longer than the head, moderately stout, compressed ; the upper mandible with the ridge formed of two generally united plates, at the anterior end of which are the nostrils, the tip decurved, compressed, and pointed ; the edges of both mandibles sharp ; the tip of the lower with its edges decurved.

The mouth is wide and dilatable ; the palate longitudinally ridged ; the tongue tapering, pointed, flat above ; the œsophagus of moderate width along the neck, but within the thorax dilated into an enormous sac ; the stomach, on the

contrary, very small, and usually reversed ; the intestine long and slender ; the cœca very small, or wanting.

The feet are of moderate length, sometimes rather long ; the tibia bare to some extent ; the tarsus little compressed ; the hind toe extremely small and elevated, with a large conical decurved or deflexed claw ; the anterior toes slender, webbed ; the claws arched, compressed, acute.

The plumage is full, soft, rather dense or compact on the back and wings ; the latter elongated, rather narrow, and pointed ; the tail short.

As we have but few species, belonging to three genera, it is not necessary to present a general history of these remarkable birds. The genera mostly adopted by systematic writers are :—*Diomedea*, *Procellaria*, *Fulmarus*, *Daption*, *Prion*, *Puffinus*, and *Thalassidroma*, all the species of which are wanderers on the face of the ocean, seeking their subsistence among the varied substances floating there, or the fishes and other animals that come within reach, none of them diving in pursuit of prey, although they dip or plunge into the water to secure it. They are remarkable for the quantity of oil contained in their capacious gullets, and which, on being wounded or seized, they vomit, some of them, it is said, also squirting it through their tubular nostrils. Many of them nestle in holes and crevices, laying one only, or a few white eggs, in which respect they differ from the *Larinæ*.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. FULMARUS. FULMAR.

Bill rather short, strong, moderately compressed toward the end, straightish, but with the tip of the upper mandible much decurved, and acute ; the dorsal plate broad, the nostrils opening directly forwards, and separated only by a thin septum ; lower mandible with the sides erect, and widely grooved longitudinally. Legs of ordinary length ; tarsus rather stout,

reticulated; hind toe extremely small, with a conical claw; interdigital membranes full. Wings very long, narrow, and pointed; tail rather short.

1. *Fulmarus glacialis*. *Northern Fulmar*. Bill and feet greenish-yellow; back and wings pale greyish-blue; primary quills and coverts blackish-brown; the other parts white.

GENUS II. PUFFINUS. SHEARWATER.

Bill about the length of the head, rather slender, much compressed toward the end, slightly rearcuate, with the tips decurved, that of the upper strong and acute; the dorsal plate convex, the nostrils opening directly forwards, with two distinct apertures; lower mandible without a distinct angle at the symphysis. Legs of ordinary length; tarsus compressed; hind toe represented by a straight claw; interdigital membranes full. Wings very long, narrow, and pointed; tail rather short, rounded.

1. *Puffinus cinereus*. *Cinereous Shearwater*. Length about eighteen inches; bill two inches; tarsus two inches or more; tail graduated.

2. *Puffinus Anglorum*. *Manx Shearwater*. Length about fifteen inches; bill an inch and two-thirds; tarsus an inch and three-fourths; tail rounded.

GENUS III. THALASSIDROMA. STORM-PETREL.

Bill shorter than the head, slender, much compressed toward the end, the tips decurved, that of the upper pointed; the nostrils opening directly forwards by two approximated tubes; lower mandible with its dorsal line declinate and concave. Legs rather long or moderate, very slender, little compressed, reticulate; hind toe extremely diminutive, with a small conical claw; anterior toes rather long, slender; interdigital membranes emarginate. Wings very long, narrow, with the second quill longest; tail rather long, various in its termination.

1. *Thalassidroma Bulwerii*. *Bulwer's Storm - Petrel*.

Tail cuneate ; plumage deep sooty-black, tinged with brown beneath ; length ten inches.

2. *Thalassidroma Leachii*. *Leach's Storm-Petrel*. Tail forked ; plumage greyish-black tinged with brown ; feathers of the rump, sides of abdomen, and outer lower tail-coverts white ; length nearly eight inches.

3. *Thalassidroma Wilsonii*. *Wilson's Storm-Petrel*. Tail even ; plumage greyish-black tinged with brown above, sooty-brown beneath ; rump, sides of abdomen, and outer lower tail-coverts white ; length seven inches and a half.

4. *Thalassidroma pelagica*. *Common Storm-Petrel*. Tail slightly rounded ; plumage greyish-black above, sooty-brown beneath ; feathers of the rump, and sides of abdomen white ; length nearly six inches.

FULMARS. FULMAR.

THE Fulmars are birds of moderate size, and rather stout form, which inhabit the northern seas, and resemble Gulls in their aspect and habits. Their bill is rather shorter than the head, stout, moderately compressed, straight, but with the tip much decurved. Upper mandible with the dorsal plate separated by grooves from the sides, the edges direct and sharp, the tip or terminal unguis strong, decurved, acute. Lower mandible with the angle long and narrow, the sides erect, with a longitudinal groove, the dorsal line very short, ascending, slightly concave, the edges sharp, decurved at the end.

Mouth wide ; tongue slender, tapering, pointed ; œsophagus wide, and within the thorax dilated into an oval sac of enormous size ; stomach small, reversed or turned upside down ; intestine of moderate length and width.

The legs are of ordinary length ; the tarsus rather stout, and reticulated ; the hind toe extremely small, with a conical claw ; the anterior toes slender ; their membranes full ; the claws arched, compressed, acute.

The plumage is full and close ; the wings very long, narrow, and pointed ; the tail rather short.

They nestle in rocky places, lay a single white egg, feed on oily and other substances, and on being seized or wounded disgorge a quantity of oil more or less pure.

FULMARUS GLACIALIS. THE NORTHERN FULMAR.

FULMAR. MALLEMOKE.

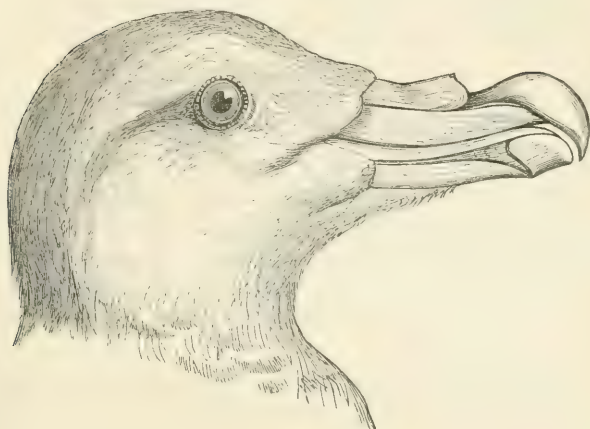


FIG. 87

Procellaria glacialis. Linn. Syst. Nat. I. 213.

Procellaria glacialis. Lath. Ind. Ornith. II. 823.

Petrel Fulmar. *Procellaria glacialis.* Temm. Man. d'Ornith. II. 802.

Fulmar. Mont. Ornith. Diet. and Suppl.

Fulmar Petrel. *Procellaria glacialis.* Selby, Illustr. Brit. Ornith. II. 525.

Procellaria glacialis. Jenyns, Brit. Vert. Anim. 284.

Procellaria glacialis. Bonap. Comp. List, 64.

Bill stout, with the nasal plate concave and flattened ; tail slightly rounded, of fourteen feathers ; bill and feet greenish-yellow ; head, neck, and lower parts white ; back and wings pale greyish-blue ; primary quills and coverts blackish-brown.

MALE IN SUMMER.—The Common Fulmar of the Northern Atlantic is a rather stout bird, not unlike a Gull in appear-

ance, having the body moderately full; the neck of ordinary length; the head rather large and ovate. Bill shorter than the head, strong, nearly straight, slightly compressed. Upper mandible with its outline concave above, the dorsal plate broad, opening directly forwards; the nostrils separated by a thin septum; the sides convex, and separated by a groove from the nasal plate and the unguis, which is very strong, decurved, and acute. Lower mandible with the angle long, rather wide, but acute; the sides erect and convex; the edges sharp and inflexed, as are those of the upper, decurved at the end; the dorsal line very short, ascending, slightly concave.

Eyes rather small. Apertures of ears moderate. Legs stout; tibia bare for a short space; tarsus slightly compressed, covered all round with reticularly arranged scales, those on the anterior and posterior ridges much smaller. Hind toe very diminutive, with a conical, obtuse claw; anterior toes long, slender, scutellate, connected by entire striated membranes, the fourth a little longer than the third, the second or inner not much shorter. Claws arched, compressed, rather acute.

Plumage full, close, elastic, blended; on the back and wings rather compact. Wings long, pointed; primaries tapering, acuminate, the first longest; secondaries broad and rounded. Tail rather short, slightly rounded, of fourteen broad feathers.

Length to end of tail 20 inches; wing from flexure 13; tail $4\frac{3}{12}$; bill along the ridge $1\frac{1}{12}$, along the edge of lower mandible $2\frac{2}{12}$; tarsus $2\frac{2}{12}$; outer toe and claw $3\frac{2}{12}$; middle toe and claw 3.

FEMALE.—The female is similar to the male, and about the same size.

The above description is taken from specimens brought by the surgeons of whalers from Davis' Straits. The following is from recent St. Kilda specimens, by Mr. John MacGillivray:—"Upper parts bluish-grey, darker on the wings, and gradually fading away to the tail; head and neck white, with a slight tinge of yellow on the throat, and a small

black spot before the eye, extending slightly over it; bill bluish-yellow, of different shades, notched with darker patches and streaks; whole of the under parts white, except under surface of the wings, which is bluish-grey, the wing-coverts being only slightly tinged with that colour. Legs pale flesh-coloured, darker on outer surface of outer toe.

“MALE AND FEMALE.—Length $20\frac{1}{2}$, $19\frac{1}{2}$; extent of wings 46, $44\frac{1}{2}$; wing from flexure 13, 13; tail $4\frac{3}{4}$, $4\frac{2}{12}$; bill, measured straight, $1\frac{8}{12}$, $1\frac{1}{2}$; nasal tube $\frac{9}{12}$, $\frac{9}{12}$; gape $2\frac{2}{12}$, 2; tarsus $2\frac{3}{12}$, $2\frac{2}{12}$; middle toe and claw 3, 3; outer $3\frac{1}{12}$, 3; inner $2\frac{5}{12}$, $2\frac{3}{12}$.”

HABITS.—Interesting statements respecting this bird have been given by some of the arctic voyagers, who found it extremely abundant in the icy seas, and especially in Hudson's Bay, Davis' Strait, and Baffin's Bay. It is also said by various authors to occur in Iceland, Feroe, Norway, and not unfrequently on the coasts of Holland and France. On the eastern side of America it extends, according to Mr. Audubon, as far south as Long Island. In Britain it is seldom met with elsewhere than at its only breeding-place there, the Island of St. Kilda. Mr. Selby has given a very good account of its habits as observed there. Not having been at that celebrated locality, I prefer to any facts that I could bring together the excellent description, taken from actual inspection, by my son, in 1840:—

“St. Kilda has long been noted as the only breeding-place in Britain of the Fulmar Petrel, *Procellaria glacialis* (An Fulmar, or Fulimar). This bird exists there in almost incredible numbers, and to the natives it is by far the most important of the productions of the island. It forms one of the principal means of support to the inhabitants, who daily risk their lives in its pursuit. The Fulmar breeds on the face of the highest precipices, and only on such as are furnished with small grassy shelves, every spot on which above a few inches in extent is occupied with one or more of its nests. The nest is formed of herbage, seldom bulky, generally a mere shallow excavation in the turf, lined with dried

grass and the withered tufts of the sea-pink, in which the bird deposits a single egg, of a pure white colour when clean, which is seldom the case, and varying in size from 2 inches 7 lines to 3 inches $1\frac{1}{2}$ line in length, and 1 inch 11 lines to 2 inches in breadth. On the 30th of June, having partially descended a nearly perpendicular precipice 600 feet in height, the whole face of which was covered with the nests of the Fulmar, I enjoyed an opportunity of observing the habits of this bird, which has fallen to the lot of few of those who have described them, as if from personal observation. The nests had all been robbed about a month before by the natives, who esteem the eggs of this species above all others; those of the Auk, Guillemot, Kittiwake, and Puffin ranking next; and the Gannet, Scart, and Cormorant last of all. Many of the nests contained each a young bird, a day or two old at farthest, thickly covered with long white down. Such of the eggs as I examined *in situ* had a small aperture at the broad end, at which the bill of the chick was visible, sometimes protruding a little way. Several addle eggs also occurred. The young birds were very clamorous on being handled, and vomited a quantity of clear oil, with which I sometimes observed the parent birds feeding them by disgorging it. The Fulmar is stated in most works on ornithology to possess the power of ejecting oil with much force through its tubular nostrils, using this as a mode of defence; but although I surprised several upon the nest, I never observed them attempt this. On being seized, they instantly *vomit* a quantity of clear amber-coloured oil, which imparts to the whole bird, its nest and young, and even the very rock which it frequents, a peculiar and very disagreeable odour. Fulmar oil is among the most valuable productions of St. Kilda, and is procured of two kinds by different processes. The best is obtained from the old bird by surprising it at night upon the rock, and tightly closing the bill until the fowler has secured the bird between his knees, with its head downwards. By opening the bill the Fulmar is allowed to disgorge about a table-spoonful, or rather more, of oil into the dried gullet and stomach of a Solan Goose, used as a reservoir for that purpose. These,

when filled, are secured with a string, and hung on cords across the interior of the huts until required for use. The oil thus procured and preserved, besides supplying their lamps, is used by the inhabitants as a medicine, being sometimes of considerable efficacy in chronic rheumatism, and acting as a cathartic; while, from its nauseous taste and smell, it would doubtless prove an effectual emetic also to any but a St. Kildian. In the beginning of August the natives descend the rocks for the young Fulmars, which are then nearly fledged; and by boiling with water, in proper vessels, are made to furnish a large quantity of fat, which is skimmed off, and preserved in casks in the solid form. The old Fulmar is much esteemed as food by the St. Kildians, principally on account of its sub-cutaneous covering of fat, a substance of which they are immoderately fond. One which I had the curiosity to taste unexpectedly proved tolerable enough, after the envelope in question had been removed. Perhaps the keenness of my appetite deceived me, as it was not blunted by the following bill of fare:—Fulmar, Auk, Guillemot, one of each, boiled; two Puffins, roasted; barley-cakes, ewe-cheese, and milk; and, by way of dessert, raw dulse and roasted limpets *ad libitum*.

“It is chiefly in pursuit of the Fulmar that the St. Kildian requires to endanger his life, by descending the tremendous precipices, on the faces of which it breeds in almost incredible numbers. Their mode of procedure is as follows:—Two men go in company, each furnished with several coils of rope, about half an inch in diameter. The person whose turn it is to descend fastens one of the ropes under his arm-pits, and, holding the extremity of another rope in one hand, is lowered down the cliff. His comrade stands a little way from the edge, holding the supporting rope firmly with both hands, and letting it out very slowly, while he allows the other, or guide-rope, to slip out as is required from under one foot, which loosely secures it. When the rope is all run out, another is joined to it by means of a noose with which it is provided, and the line is thus lengthened to any degree. On arriving at a ledge occupied by birds, the fowler commences his operations, easily securing the eggs and young

birds, knocking down the old ones with a short stick, or catching them by a noose attached to a long slender rod, killing them in a moment by dexterously bending the head backwards upon the neck. He then secures his sport by bundling the birds together, and tying them to a rope let down from above, depositing, at the same time, in a small basket the eggs which he has collected. The dexterity of these rocksmen is truly astonishing. The smallest spot is considered by them as a secure enough standing-place; and they will creep on hands and knees, though cumbered with a load of birds, along a narrow ledge, seemingly without concern for their personal safety.

“The Fulmar flies with great buoyancy and considerable rapidity, and when at sea is generally seen skimming along the surface of the wave at a slight elevation, though I never observed one to alight or pick up anything from the water. Several which I dissected had the stomach filled with pure oil, mixed up with the indigestible horny mandibles of some of the Sepiadæ, which, we may conclude, form their principal food. It is partially a nocturnal bird, for I seldom observed it at any distance from St. Kilda except during the evening and about daybreak, at the latter time always flying in the direction of St. Kilda, as if hastening homewards. I have also, on one or two occasions, when at sea, engaged in cod-fishing to the westward of the Harris islands, in very gloomy and rainy weather, observed a few Fulmars flying about the boat, probably attracted by the fish we had caught. At its breeding-places, however, the Fulmar is always in motion, comparatively few being to be seen upon the rocks, the great mass being engaged flying in circles along the face of the precipice, and always in the same direction, none crossing, probably on account of the confusion this would cause among such an immense multitude. I never observed them utter any cry when thus engaged, or even when their nests were being robbed. The Fulmar does not allow itself to be handled with impunity, but defends itself with its powerful bill, which it can use with as much effect as good will.”

Considering the vast number that resort to St. Kilda, it

is surprising that so few individuals are to be seen along the west coast of Scotland. In the course of a residence of several years in Harris, I did not obtain more than one specimen. On the eastern side of Scotland, however, where there is no breeding-place, individuals often appear in stormy weather in the Moray Firth; and along the coast from St. George to Fraserburgh many continue all winter, arriving toward the end of autumn, and departing in spring. I have seen individuals shot at Banff by Mr. Edwards. In the Firth of Forth I have never met with any, although individuals are stated to have been obtained in Durham, Essex, and Cornwall. Mr. Thompson indicates only three specimens obtained in Ireland: one at Inchidoney Island, on the southern coast, in 1832; another in Dublin Bay, in January 1846; the third at Castle Freke, county Cork, in October 1845.

The egg is of an elongated oval shape; the shell rather thin, lustreless, punctato-granulate, dull white, becoming soiled; the length of one from St. Kilda two inches eight-twelfths, its greatest breadth one inch ten-twelfths.

From the various statements made by observers, it appears that the Fulmar feeds on fishes, cephalopodous mollusca, cirripedia, most other kinds of animal substance, especially such as are oily or fatty. The Rev. Mr. Scoresby, in his "Arctic Regions," states that it is the constant companion of the whale-fisher, joining his ship immediately on passing the Shetland Islands, and accompanying him to the highest accessible latitudes, keeping an eager watch for anything thrown overboard. Fulmars are extremely greedy of the fat of the whale. Though few should be seen when a whale is about being captured, yet, as soon as the flensing process commences, they rush in from all quarters, and frequently accumulate to many thousands in number. They then occupy the greasy track of the ship; and being audaciously greedy, fearlessly advance within a few yards of the men employed in cutting up the whale. If, indeed, the fragments of fat do not float sufficiently away, they approach so near the scene of operations, that they are knocked down with boat-hooks in great numbers, and sometimes taken up

by the hand. The sea immediately about the ship's stern is sometimes so completely covered with them, that a stone can scarcely be thrown overboard without striking one of them. When anything is thus cast among them, those nearest the spot where it falls take the alarm, and these exciting some fear in others more remote, sometimes put a thousand of them in motion; but as in rising into the air they assist their wings for the first few yards by striking the water with their feet, there is produced by such a number of them a loud and most singular splashing. It is highly amusing to observe the voracity with which they seize the pieces of fat that fall in their way; the size and quantity of the pieces they take at a meal; the curious chuckling noise which, in their anxiety for despatch, they always make; and the jealousy with which they view, and the boldness with which they attack, any of their species that are engaged in devouring the finest morsels. They frequently glut themselves so completely that they are unable to fly; in which case, when they are not relieved by a quantity being disgorged, they endeavour to get on the nearest piece of ice, where they rest until the advancement of digestion restores their wonted powers. Then, if opportunity admit, they return with the same gust to the banquet as before; and though numbers of the species may be killed, and allowed to float about among them, they appear unconscious of danger to themselves. When carrion is scarce, the Fulmars follow the living whale; and sometimes, by their peculiar motions, when hovering at the surface of the water, point out to the fisher the position of the animal of which he is in pursuit. They cannot make much impression on the dead whale, until some more powerful animal tears away the skin; the epidermis and rete mucosum they entirely remove, but the true skin is too tough for them to make way through it."

YOUNG.—According to M. Temminck, "the young of the year have all the parts of the body of a pale grey, shaded with brown; the feathers of the back and wings terminated by deeper brown; the quills and tail-feathers are of the same brownish-grey tint; before the eyes is an angular spot of a black colour; the bill and feet yellowish-grey."

PUFFINUS. SHEARWATER.

THE Shearwaters are intermediate between the *Procellariæ* and the *Thalassidromæ*. They are of rather small size and moderately compact form, with the neck rather short; the head rather large and oblong. The bill about the length of the head, rather slender, nearly as high as broad at the base, much compressed toward the end, slightly recurved, with the tips decurved; upper mandible with two dorsal plates ending abruptly and covering the tubular nostrils, beyond which the dorsal line is concave, and then convex; the tip strong, much compressed, decurved, acute; lower mandible with the angle very long and narrow, the dorsal line decurved, the edges sharp and inflexed, the tip decurved, acute. The feet are rather large; the tibia bare for a short space; tarsus compressed, reticulated; hind toe extremely small, with a conical, deflexed claw; anterior toes long, slender, their membranes full, the outer toe slightly longer than the third; claws arched, compressed, acute. Plumage full, close, blended, rather compact above. Wings very long, narrow, pointed, the first quill longest; tail of moderate length, graduated or rounded, of twelve feathers.

They differ from the Fulmars in having the bill much more slender, with both points decurved, and the tarsi compressed.

PUFFINUS CINEREUS. THE CINEREOUS
SHEARWATER.

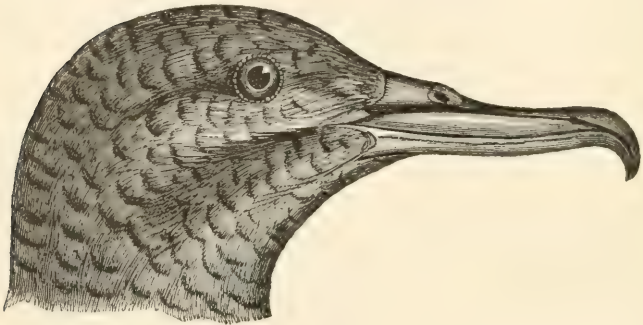


FIG. 88.

Cinereous Shearwater. *Puffinus cinereus*. Selby, Illustr. Brit. Ornith. II. 528.

Procellaria Puffinus, and *P. fuliginosa*. Jenyns. Brit. Vert. Anim. 284, 285.
Puffin majeur ou arctique. *Puffinus major*. Temm. Man. d'Ornith IV. 507.
Puffinus cinereus. Bonap. Comp. List, 64.

Length about eighteen inches ; bill about two inches long ; tarsus two inches and a little more ; tail graduated ; upper parts brown ; the head and nape tinged with grey ; wing-coverts ash-grey ; primary quills and tail-feathers blackish-brown ; lower parts white ; or, the upper parts deep brown ; the lower brownish-grey.

THIS species, of which only a very few individuals have been obtained in England, was introduced to the British Fauna by Mr. Selby, a specimen from the coast of Northumberland having come into his possession. About the same time another, killed on the Yorkshire coast, was procured by Mr. Strickland, who subsequently met with a second. Some

others are added by Mr. Yarrell. But differences in the colours of the plumage and bare parts, as well as the dimensions of these birds, have rendered their determination somewhat uncertain.

Mr. Selby describes his specimen thus :—" Bill, from the forehead to the tip, one inch and three-quarters long, slightly recurved, with the dertrum arched and strongly hooked ; nasal tubes obliquely truncated and open in front. Tip of the lower mandible bent down, and following the curve of the upper one. Head, back, part of the neck, and the upper plumage, blackish-brown, with the margins and tips of the feathers of the scapulars lighter. Throat, lower part of the neck, and the whole of the under plumage, deep ash-grey, with a tinge of broccoli-brown. Quills and tail brownish-black. Legs having the outer part of the tarsus deep grey ; the inner part and webs yellowish. Tarsus two inches and one-eighth long. Middle and outer toes two inches and a half in length."

Mr. Strickland's specimens are figured by Mr. Gould as *Puffinus cinereus*, but doubtfully. M. Temminck, however, asserts that two species have been confounded under the name of *Puffinus cinereus* ; one, that long known, or at least described or referred to, and belonging to the southern tracts, another, which is "very abundant in high latitudes, and extremely common on the banks of Newfoundland, and which is *Puffinus major* of Faber." The three British specimens above mentioned, he refers to this latter.

But neither *Puffinus cinereus*, nor *Puffinus major*, has been satisfactorily described, in so far as I am aware ; nor, if they be different, have they been compared and contrasted. M. Temminck states that in *P. major* the nostrils are distant, which is not said to have been the case in the English specimens. His assertion that it nestles in thousands on the banks of Newfoundland, would, if true, be a most interesting announcement. In Mr. Audubon's *Ornithological Biography* is a full description of a North American bird, which he refers to *Puffinus cinereus*, but which, from its size, and some other characters, ought to belong to *P. major*, if, indeed, the two be not identical.

In short, so much vagueness and uncertainty exists with respect to these Puffins, and so ill qualified am I to throw any light on the subject, that I think it best to refer the matter to those who may have opportunities of examining fresh specimens. Mr. Thompson indicates its occasional occurrence on the coast of Ireland, and gives some statements furnished by Mr. Robert Davis, of Clonmel, who, on visiting Dungarvan, Waterford, in the summer of 1840, learned that it "is never met with near the shore, but only far out, and is occasionally taken on the hook and line employed in hake-fishing. The fishermen sometimes keep them for weeks about their houses, and in some instances the birds have become tame ; they never attempt to fly." Two individuals which he kept for some time alive, scrambled or ran along with their breasts about an inch and a half or less from the ground, and never attempted to fly, but even allowed themselves to fall from a height without so much as opening their wings.

PUFFINUS ANGLORUM. THE MANX SHEAR- WATER.

LYRE. LYRIE. SCRABE. SCRABER.

Procellaria Puffinus. Lath. Ind. Ornith. II. 824.

Shearwater Petrel. Mont. Ornith. Dict. and Suppl.

Petrel Manks, Procellaria Anglorum. Temm. Man. d'Ornith. II. 806 ;
IV. 509.

Manks Shearwater. Puffinus Anglorum. Selby, Illustr. Brit. Birds, II. 529.

Puffinus Anglorum. Bonap. Comp. List, 64.

Length about fifteen inches ; bill about an inch and two-thirds long, slender ; tarsus an inch and three-fourths ; tail rounded ; upper parts deep greyish-black, lower white ; sides of the neck indistinctly barred with grey and white.

MALE.—This species, much smaller than the last, and in form and habits intimately allied to the next group, has the body rather slender and elongated ; the neck of moderate length ; the head ovate, anteriorly narrowed. Bill about the length of the head, rather slender, somewhat compressed, nearly straight, with the tips decurved ; the upper mandible with the nostrils approximated, the sides convex, the edges sharp and slightly inflexed, the unguis stout, decurved, rather acute ; lower mandible with the angle very long and narrow, the dorsal line short and decurved, the sides convex, the edges sharp and inflected, the tip decurved.

The eyes and aural apertures rather small. The legs of moderate length ; tibia with a small portion bare ; tarsus much compressed, edged before and behind, with a series of large scales on the inner side. Hind toe a slight knob, with a deflexed conical claw ; anterior toes rather long, the third and fourth about equal, the membranes striated, with the

margin concave; claws small, slightly arched, compressed, rather obtuse.

Plumage dense, soft, blended, on the back and wings rather compact. Wings long, narrow, acute; primaries tapering, with the tip rounded, the first longest. Tail rounded, of twelve feathers.

Bill brownish-black, paler at the base; iris dark brown. Outer side of the tibia behind, the outer toe, and the outer side of the third dark brown; inner and anterior part of outer side of the tarsus, with the inner side of the third toe, and the whole of the second, reddish flesh-colour; interdigital membranes paler; claws brownish-black. All the upper parts glossy greyish-black; the lower white; the sides of the neck and breast transversely barred with grey and white.

Length to end of tail 15 inches; extent of wings 28; wing from flexure $9\frac{1}{2}$; tail $3\frac{1}{2}$; bill along the ridge $1\frac{8}{12}$, along the edge of lower mandible 2; tarsus $1\frac{10}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

FEMALE.—Similar to the male.

HABITS.—The most northern British station for this bird is Shetland, whence my esteemed friend and fellow-student, Dr. Edmondston, thus writes to me respecting it:—"It breeds, like the Stormy Petrel, in holes in grassy declivities. The nest is difficult to find. The bird is not seen, unless on the ocean, during the day, or it remains concealed in its hole, and only in the twilight can it be detected by the vigilant and hardy fowlers, who, from their great partiality for the young, regard the discovery of their nests as a sort of treasure, which they bequeath as an heirloom to their sons. It produces only a single young one, which, though excessively fat, it must be confessed, justifies the epicurean taste of the fowlers. It is rather strange that the young of sea-birds, although uniformly fed on fish, should be totally free from a fishy taste, while the flesh of adults is almost always harsh, and often nauseous." Mr. Dunn states that "the Shearwater is tolerably plentiful both in Orkney and Shetland during the summer season. Considerable numbers breed in

Foula and Unst in the latter country, and in Orkney their favourite residence is upon some rocks near Pappa Westra. They build their nests in holes and fissures of the cliffs, in situations similar to the Puffin."

According to Messrs. Baikie and Heddle, "This is a migratory species, arriving (in Orkney) in February and March, and remaining until autumn. It is not very numerous, and its breeding-spots are confined to Papa Westray, Westray, and Waas." In Mr. Low's time, or about forty years ago, it was more numerous, and in greater request. "This bird," says he, "is the chief acquisition our rock-men get for all the danger in climbing the most dreadful precipices; for this, one sitting on the brink of the rock, with a coil of rope made of hair on his arm, will let his neighbour many fathoms over the steepest rocks, such as would make others shudder only to look at, and yet these people think no more of it than an airing; and though few years pass without some or other of them perishing, yet that never deters the survivors. It is really dreadful to see people let over a rock several hundred fathoms height, with the deep below them, supported only by the single arm of their comrades, who have nothing to rest themselves against, but must depend on their strength for both their preservation: sometimes, indeed, both slip together. The Lyre comes to these rocks in February or March, and some time after their arrival build in holes of the little earth that is to be found in the interstices of the rocks. It lays a single white egg, something like a hen's, but blunt at each end. In August the young are fit for taking, and are very much sought after as delicacies by those who love good cheer. They are, indeed, very fat, but are nauseously rank and fishy-tasted; however, they sell pretty high, and are lucrative to the captors. The country people salt them down for winter provision, and boil them with cabbage; what sort of a dish this makes I cannot say, but suppose not extraordinary. They likewise take the old ones in March, but these are poor, and not near so good as the young."

The next place frequented by it is St. Kilda. Mr. John MacGillivray's statement respecting it is as follows:—"Puffinus anglorum, the Shearwater, or Manx Petrel, is not

uncommon in St. Kilda, where it breeds in excavations formed by itself in the soft earth, filling many of the fissures among the rocks. Comparatively few are taken by the fowlers, for it is never made a regular object of pursuit; and yet I have seen a bunch of several dozens brought by one of them from the Island of Ivay. It lays but a single egg, which I was told it deposits upon a slight nest of dried grass at the bottom of its burrow, where it spends most of the day, during which time few are to be seen, it being, in a manner, nocturnal in its habits. Its flight is very characteristic, and, joined to its dark colour, renders even a single individual very easy of detection, though among a flock of other birds, and at a considerable distance."

A small island called the Calf of Man, close to the mainland at its south end, was formerly inhabited by it in great numbers, but is now said to be deserted. The Isle of Annet, one of the Scilly Islands, is still frequented by it, as we know from the account given to Mr. Yarrell by Mr. Mitchell. Mr. Gould has had specimens sent him from the coast of South Wales, where it is said to be abundant in spring. On the southern coast it becomes rarer eastward, and has very seldom been obtained on the east coast of England or Scotland.

In winter it is dispersed over the seas, and probably migrates southward. Its flight is gliding, rapid on occasion, buoyant and easy. It flies low over the sea, descending into the troughs of the waves, and mounting again. When hovering over an object seen in the sea, it lets down its feet, and pats the water with them. In dark or stormy weather it has an ominous aspect as it glides rapidly along, and disappears in the haze. Its food consists of various animal substances; but the particular kinds have not been determined, its gullet and stomach having usually been found filled with decomposed matter and oil, which it vomits on being seized. In March and April great numbers betake themselves to certain localities, where they reside until the end of August, when their young are fledged. They form holes in the soft earth, in the crevices of rocks, or on grassy slopes, each female depositing a single elliptical white egg.

At this season, they keep all day in their holes, unless in dark or stormy weather, and come abroad in the evening, at which time, and in the early dawn, it is that they are usually met with.

In Ireland, according to Mr. Thompson, it is "a regular summer migrant to some parts of the coast, and breeds on the larger Skellig Island off the coast of Kerry.

The extent of its distribution is not known. It is said to be common in Feroe, rare in Iceland, plentiful on the banks of Newfoundland, seldom met with in Norway, or along the western coasts of Europe, not uncommon on the Dardanelles and Bosphorus.

THALASSIDROMA. STORM-PETREL.

THE birds of which this genus is composed are the smallest of those which, being furnished with interdigital membranes, are peculiarly adapted for swimming. Diminutive as they are, and therefore, as one might naturally think, less able than the larger species to withstand the violence of the winds and waves, they are, of all birds, those which venture to the greatest distance from land, being often met with in the very middle of the Atlantic Ocean. As, in searching for food, they fly close to the surface, and while hovering or stooping, let down their feet, and pat the water with them, they seem, as it were, to run on the waves ; whence the name of *Thalassidroma*, or sea-runner, applied to them, as well as that of *Petrel*, or Little Peter, in allusion to the Apostle. They are of a slender form, having the body very small, compared with the bulk of plumage with which it is covered ; the neck short and slender ; the head ovate, and compressed.

Bill shorter than the head, slender, much compressed, decurved at the end, and acute ; upper mandible with the dorsal line at first direct or concave, then abrupt at the end of the nasal tube, afterwards nearly straight for a short space, and finally much decurved, the ridge elevated and separated by a groove from the sides, which are convex at the base, the edges sharp, sinuate, approximating toward the end, the tip compressed, decurved acute ; the nostrils dorsal, submedial, opening in front by two approximated tubes ; lower mandible with the intercrural space narrow and pointed, the lower outline of the crura decurved, the dorsal line declinate and concave, the edges sharp, approximated or even in contact toward the end, the tip compressed and decurved.

The mouth of moderate width, but dilatable ; the palate convex, with four ridges, anteriorly very narrow, with a

medial prominent line. The tongue somewhat triangular, much flattened, toward the end horny and pointed. The œsophagus of moderate width, but enlarged below into an enormous proventricular sac, covered with scattered glandules, and at its lower part recurved toward the right side, so that the stomach, which is small, elliptical, and muscular, is reversed in position. In consequence of this derangement, the pylorus is placed on the left side, and the intestine arched upward and to the right, before forming the usual duodenal curve. The intestine is rather long and narrow, with small cœca or none, and a globular cloaca.

Nostrils small, tubular, placed close together, and opening on the ridge. Eyes rather small, with the eyelids feathered. Aperture of ear rather small. Legs slender, placed well forward; the tibia long, bare for about a fourth; the tarsus moderate or rather long, very slender, little compressed, anteriorly reticulate. The hind toe extremely diminutive, with a small conical claw; the fore toes rather long, slender, scutellate, the third longest, the fourth little shorter; the interdigital membranes striated, and emarginate. The anterior claws are small, little arched, compressed, rather acute.

The plumage is full, very soft, and blended. The wings very long and narrow, with twenty-four quills; the primaries very long, tapering, and obtuse, the second longest, the third longer than the first. The tail moderate or long, of twelve broad soft feathers; but varying in its termination, being cuneate, rounded, even, and emarginate or forked in different species.

The predominating colours are greyish-black and sooty brown. The sexes are similarly coloured, and the young differ only in having the tints lighter. The Petrels are in a great measure nocturnal, being most active in the dusk, during the summer nights, and in gloomy weather. During winter and spring they roam over the seas, and in the beginning of summer collect in bands, which resort to particular breeding-places, on headlands, or unfrequented islands. They nestle in the crevices of rocks, in holes in the turf, or under stones on the beaches. The female lays a single, large, elliptical, white egg. The young remain in the nest until

able to fly. The sitting birds are easily caught in their nests, as they seldom attempt to fly off. On being seized, these birds, like the Fulmars, discharge the contents of their stomachs, generally consisting of oil. They feed on oily and fatty substances, small crustacea and mollusca, which they pick up as they skim over the waters. They float lightly, like Gulls, but are incapable of diving. Their flight is buoyant and rapid, somewhat resembling that of swallows. The species, which are not numerous, are distinguished chiefly by their relative size, and the form of the tail. One, *Thalassidroma pelagica*, is common in the British seas, and breeds in our northern islands; another, *Thalassidroma Leachii*, although uncommon, breeds in St. Kilda. Some individuals only of other two species have been met with in Britain.

These birds are confounded by navigators under the general name of Mother Carey's Chickens, so that the limits of the distribution of the species are not well known. They are held in abhorrence by sailors, being supposed to prognosticate stormy weather, especially when they fly around, or in the wake of the ship. The circumstances under which they approach vessels have not, however, been correctly described. Some say they come up before a gale for shelter, being able, by their rapid flight, to outstrip it; while others allege that in rough or calm weather, before a gale or before a calm alike, they make their appearance, and that their purpose is simply to pick up the objects of food raised by the agitation of the water, or such as are thrown overboard.

THALASSIDROMA BULWERII. BULWER'S STORM-PETREL.

Procellaria Bulwerii. Bulwer's Petrel. Jardine and Selby, Illustr. pl. 65.
Bulwer's Petrel. Thalassidroma (?) Bulwerii. Gould. Birds of Europe, pl.
449.

Thalassidroma Bulwerii. Bonap. Comp. List, 64.

Tail cuneate ; bill and feet black ; plumage deep sooty-black, on the lower parts slightly tinged with brown ; secondary coverts paler ; length ten inches.

THIS species was first described and figured by Sir William Jardine, Bart., and Prideaux John Selby, Esq., in the second volume of their Illustrations of Ornithology, in which is represented a bird of the Petrel genus, with dusky-brown plumage, inclining to bluish-grey on the breast, and with the secondary quills rose-coloured, accompanied with the following description :—" The length of our specimen is about ten inches : it will come under that division of the group where the nostrils are contained in one tube, but have a division between them. The plumage is entirely of a deep sooty-black, paler upon the throat, and on the breast and belly slightly tinged with brown. The form of the tail is the greatest peculiarity ; this contains twelve feathers, and is very much cuneated, the central plumes being above two inches longer than the exterior, thus giving us a form at variance with the smaller and true Petrels, where we find it either square or forked." It inhabits Madeira or the small islands adjacent.

It was afterwards described and figured by Mr. Gould in the fourth volume of his Birds of Europe. The figure here differs from that in the work referred to above, in agreeing with the description, if so brief a notice as the following may

be so called :—" The whole of the plumage is of a deep sooty-black, becoming paler upon the throat, and brown on the edges of the greater wing-coverts ; bill black ; legs and feet blackish-brown." Mr. Gould prefaces this description with the following notice :—" On the authority of Col. Dalton of Slenningford, near Ripon, we are enabled to add this rare species to the Fauna of Britain, from a fine specimen which was found on the banks of the Ure, near Tanfield, in Yorkshire, on the 8th of May, 1837, and which could not have been long dead, as it admitted of being mounted into a good cabinet specimen. It is now in the possession of Col. Dalton, who doubtless regards it as one of the greatest treasures in British Ornithology." An individual was procured at Scarborough in the spring of 1849, as stated in the Zoologist, p. 2569, by E. T. Higgins.

THALASSIDROMA LEACHII. LEACH'S STORM-PETREL.

FORK-TAILED PETREL.

Petrel de Leach. *Procellaria Leachii*. Temm. Man. d'Ornith. II. 812.

Fork-tailed Petrel. *Thalassidroma Leachii*. Audubon, Ornith. Biog. IV. 434.

Fork-tailed Storm-Petrel. *Thalassidroma Bullockii*. Selby, Illustr. II. 537.

Procellaria Leachii. Leach's Petrel. Jenyns, Brit. Vert. Anim. 286.

Procellaria Leachi. Bonap. Comp. List, 64.

Tail forked ; bill and feet black ; plumage greyish-black, tinged with brown ; quills and tail brownish-black ; smaller wing-coverts and inner secondaries light greyish-brown ; feathers of the rump, sides of abdomen, and outer tail-coverts, white ; upper tail-coverts white, tipped with black ; length nearly eight inches.

MALE IN WINTER.—This, the largest British species, and distinguished from the others by its forked tail, has the body slender, the neck short, the head oblong and compressed. The bill is shorter than the head, slender, much compressed, decurved at the end, and acute. The upper mandible with its dorsal line direct at the base, abruptly deflected at the nostrils, then for a short space straight, finally arcuate and much decurved, the ridge narrow at the base, narrow and convex in the rest of its extent, separated by a narrow groove from the sides, which are convex, the edges inclinate and sharp, the unguis narrow, decurved, and pointed ; the lower mandible with the intercrural space narrow and pointed, the crura narrow, with the sides erect, the outer outline slightly decurved, the angle slightly prominent, the dorsal line concave and declinate, the edges sharp, decurved at the end ; the gape-line sinuous.

The nostrils opening directly forward from the tube at the

base of the ridge. The eyes of moderate size. The feet are of moderate length; the tibia bare to a small extent; the tarsus of ordinary length, very slender, covered with longitudinally oblong scales. The hind toe is extremely diminutive, with a small, conical, acute claw; the anterior toes long and slender, the outer two about equal, the inner considerably shorter, the second with eighteen, the third twenty-eight, the fourth also twenty-eight scutella. The interdigital membranes slightly emarginate. The anterior claws slender, compressed, pointed, slightly arcuate.

The plumage is full, very soft, and blended; the feathers ovate. The wings are very long, exceeding the tail by half an inch, narrow, and pointed, with twenty-four quills; the primaries tapering, but rounded; the third longest, the second two-twelfths shorter, and so much shorter than the first; the rest rapidly graduated; the secondaries incurved, obliquely rounded, the outer web being shortened; the inner quills straight and elongated. The tail long, deeply forked, of twelve broad feathers, of which the medial are ten-twelfths shorter than the lateral.

The bill and feet are black; the iris dark brown. The general colour of the plumage is blackish-grey, tinged with brown, especially on the breast; the large scapulars grey at the end, and narrowly edged with white; the wing-coverts, especially the secondary coverts and inner secondary quills, are brownish-grey; the quills brownish-black; the feathers on the hind part of the rump, some of those on the hind part of the sides, and the outer lower tail-coverts, are white; some of the immediate upper tail-coverts are grey, and the white feathers on the rump have the shafts black. The tail-feathers brownish-black.

Length to end of tail $7\frac{1}{2}$ inches; extent of wings 20; wing from flexure $6\frac{4}{12}$; tail $3\frac{5}{12}$; bill along the ridge $\frac{9}{12}$; along the edge of lower mandible $\frac{1}{12}$; bare part of tibia $\frac{4}{12}$; tarsus 1; hind toe $\frac{1}{12}$, its claw $\frac{1}{12}$; second toe $\frac{9}{12}$, its claw $\frac{2}{12}$; third toe $\frac{1}{12}$, its claw $\frac{4}{12}$; fourth toe $\frac{1}{12}$, its claw $\frac{2}{12}$.

FEMALE.—The female differs from the male only in being somewhat less.

VARIATIONS.—The above description is taken from a recent individual procured in December, 1840, besides which I have examined about half a dozen skins, both European and American. Slight differences in tint are observed, and in summer the wing-coverts in particular are lighter, while the greyish-white at the ends of the longer scapulars and secondaries has disappeared. The extent of white on the rump varies, apparently, according to age.

HABITS.—This Storm-Petrel was discovered in 1818 by Mr. Bullock in the Island of St. Kilda. Although long supposed to be extremely rare, it has since been repeatedly met with on various parts of the coast. Still it is of very uncommon occurrence, compared with *Th. pelagica*; but is said to be plentiful on some of the coasts of North America, and on the banks of Newfoundland. Mr. Audubon being the only person who has given a good account of its habits, I cannot do better than present an abstract of his observations.

“The Fork-tailed Petrel, like the other species, feeds chiefly on floating mollusca, small fishes, crustacea, which they pick up among the floating sea-weeds, and greasy substances, which they occasionally find around fishing-boats or ships out at sea. When seized in the hand, it ejects an oily fluid through the tubular nostrils, and sometimes disgorges a quantity of food. It emits its notes night and day, and at not very long intervals, although it is less noisy than Wilson's Petrel. Its flight differs from that of the other two species, it being performed in broader wheelings, and with firmer flappings, in which respect it resembles that of the Night Hawk, *Caprimulgus Virginianus*, while that bird is passing low over the meadows or the waters. It is more shy than the other species, and when it wheels off after having approached the stern of a ship, its wanderings are much more extended before it returns. I have never seen it fly close around a vessel, as the others are in the habit of doing, especially at the approach of night; nor do I think that it ever alights on the rigging of ships, but spends the hours of darkness either on the water, or on low rocks or islands. It also less frequently alights on the water, or pats it with its feet, probably

on account of the shortness of its legs, although it frequently allows them to hang down. In this it resembles *Thalassidroma pelagica*, and Wilson's Petrel has a similar habit during calm weather. I have seen all the three species immerse their heads into the water, to seize their food, and sometimes keep it longer under than I had expected. About the 1st of June the species collect in numbers, and return to their breeding-places. They now fly in front of the high rocks, passing and repassing a thousand times in the day, enter their dark and narrow mansions, or stand in the passage, and emit their cries. Now they alight on some broad shelf, and walk as if about to fall down, but with considerable ease, and at times with rapidity. Now and then the mated birds approach each other, and, I believe, disgorge some food into each other's mouths. They collect grass and pebbles, of which they form a flat nest, on which a single white egg is deposited, which measures an inch and a quarter in length, by seven-eighths in breadth, is nearly equally rounded at both ends, and looks very large for the size of the bird. When boiled it has a musky smell, but is palatable. When you pass close to the rocks in which they are, you easily hear their shrill querulous notes; but the report of a gun silences them at once, and induces those on the ledges to betake themselves to their holes."

Like some of our other species, this has repeatedly been found dead, or in an exhausted state, near the coast, and even far inland, during or after stormy weather in winter. Many instances of its occurrence in various parts of Ireland are mentioned by Mr. Thompson.

REMARKS.—Although discovered by Mr. Bullock, who, it appears, knew it to be a distinct species, it was first described by M. Temminck, who dedicated it to Dr. Leach, of the British Museum. Dr. Fleming afterwards named it *Procel-laria Bullockii*, in honour of its discoverer, and "in order to do an act of common justice to the individual who had energy to undertake a voyage of inquiry, and sagacity to distinguish the bird in question as an undescribed species." Mr. Selby has followed Dr. Fleming in this matter, while others retain

M. Temminck's name. Dr. Fleming gives, as part of the specific character, "the wings, when closed, not extending beyond the tip of the tail;" and Mr. Jenyns, "the wings not reaching beyond its tip;" but these authors, I suppose, had not examined a fresh specimen, and in the one which I was so fortunate to procure, the wings extended half an inch beyond the longest tail-feathers. This was also the case with a fresh male measured by Mr. Audubon: "length to end of tail 8 inches; to end of wings $8\frac{1}{2}$."

This species differs from Wilson's Petrel in being larger, in having the bill stronger, the tail forked instead of even, and the interdigital webs black instead of yellow and black. It has no chance of being mistaken for *Thalassidroma pelagica*, which is very much smaller, with the tail rounded. If such differences in the form of the tail are merely specific in their genus, why should they be held as generic in analogous cases, but because system-makers are often very poor logicians?

THALASSIDROMA WILSONII. WILSON'S STORM-PETREL

Thalassidroma Wilsonii. Bonap. Synops. 367.

Wilson's Petrel. *Thalassidroma Wilsonii*. Aud. Ornith. Biogr. III. 486, v. 645.

Thalassidroma Wilsoni. Bonap. Comp. List.

Tail even; bill and feet black, but the interdigital membranes yellow in the middle; plumage greyish-black, tinged with brown above, sooty-brown beneath; outer secondary wing-coverts and some of the secondary quills light-brownish-grey, terminally edged with white; rump, sides of abdomen and outer lower tail-coverts white; length, seven inches and a half.

MALE.—Having examined several specimens of this species, both skins and entire individuals preserved in spirits, I am enabled, through the liberality of Mr. Audubon, who presented me with them, to give a detailed description of it. As in the other species, the body is slender, the neck short, the head of moderate size, and ovate.

The bill is shorter than the head, slender, as broad as high at the base, much compressed toward the end, with the tip decurved and acute. The upper mandible has the dorsal line a little concave to the end of the tube of the nostrils, which appear to open by a single aperture, the septum being considerably withdrawn, beyond them for a short space nearly straight, then decurved, the ridge narrow, and separated by a deep groove from the sides, which are convex, the edges sharp and inflexed, the tip slender, compressed, descending, and acute. The lower mandible has the intercrural space narrow and pointed, the lower outline of the crura little decurved, the dorsal line very slightly concave, the sides erect, toward

the end inflexed, so as to be almost in contact, the tip less decurved than in any other species.

The mouth is of moderate width, but dilatable ; the palate convex, with four longitudinal papillate ridges behind, and three before. The tongue, half an inch long, is triangular and acuminate, at the base emarginate and serrulate, flat above, with a slight medial groove. The œsophagus, for the length of an inch and a-half, is three-twelfths wide, but on entering the thorax expands into an enormous ovate sac, two inches in length, and an inch and two-twelfths in its greatest breadth. This sac, which is proventricular, is studded all over with small roundish glandules, and curves forward beneath, to end in a very diminutive muscular gizzard, which is reversed in its position, its fundus being directed forward. It is of an elliptical form, three-twelfths and a half in length, and three-twelfths in breadth, muscular, with a rugous epithelium, and, in short, a true gizzard. From its left side comes off the intestine, which curves forward over the fundus, then forms the usual duodenal loop, makes nine turns, and, from above the proventriculus, passes directly to the cloaca. Its width is at first a twelfth and three-fourths, but beyond the middle it gradually contracts to three-fourths of a twelfth ; its entire length fourteen inches. There are no cœca, but the cloaca is globular.

The plumage is full, very soft, and blended ; the feathers ovate, and distinct only on the wings, as in the other species. The wings are very long, extend, when closed, three-fourths of an inch beyond the tail, and have twenty-four quills. The primaries tapering, but rounded ; the third longest, the second four-twelfths shorter, and exceeding the first by eleven-twelfths ; the secondaries short, the outer incurved and obliquely rounded. The tail is rather long, almost even, of twelve broad rounded feathers, of which the outer are about a twelfth of an inch longer than those in the middle.

The feet are long and very slender ; the tibia bare for seven-twelfths of an inch ; the tarsus very slender, reticulate, anteriorly with a long plate on which the divisions are very obscure. The hind toe is so extremely minute as to be scarcely perceptible, its claw resembling the tip of a small

needle. The anterior toes are long, very slender, obscurely scutellate; their claws slightly arched, rather depressed, acute. The interdigital webs are very narrow, and deeply emarginate.

The bill and feet are black, but on each of the webs is an elongated yellow patch. The general colour of the plumage is greyish-black, tinged with brown, the lower parts of a sooty brown; the quills and tail brownish-black; the outer secondary wing-coverts brownish-grey, as are four of the secondary quills, which are also externally margined with white. The upper tail-coverts, some of the feathers on the rump, the sides of the abdomen, and the lateral inferior tail-coverts, with the basal part of the tail-feathers, are white.

Length to end of tail $7\frac{1}{3}$ inches; extent of wings 16; wing from flexure 6; tail $2\frac{3}{4}$; bill along the ridge $\frac{7}{12}$; along the edge of lower mandible $\frac{8}{12}$; tarsus $1\frac{5}{12}$; hind toe and claw $\frac{1}{12}$; second toe, $\frac{10}{12}$, its claw $\frac{3}{12}$; third toe $\frac{11}{12}$, its claw $\frac{4}{12}$; fourth toe 1, its claw $\frac{2}{12}$.

FEMALE.—The female is similar to the male.

HABITS.—This species, named by the Prince of Canino, in honour of the celebrated Scoto-American ornithologist, is represented as breeding on various parts of the eastern coast of North America, and as occurring plentifully on the Atlantic Ocean, although little is known as to the extent of its distribution. Mr. Audubon states that he has rarely seen it on the Gulf of Mexico, and never farther northward than lat. 51 degrees, while to the eastward few were observed by him beyond the Azores. The following extract from the Ornithological Biography of that excellent observer will afford a sufficient idea of its habits:—"Wilson's Petrel breeds on some small islands situated off the southern extremity of Nova Scotia, and called 'Mud Islands,' but which are formed of sand and light earth, scantily covered with grass. Thither the birds resort in great numbers about the beginning of June, and form burrows of the depth of two or two and a half feet, in the bottom of which is laid a single white egg, a few bits of dry grass, scarcely deserving the name of a nest, having

been placed for its reception. The egg measures an inch and a half in length, by seven-eighths of an inch in breadth, is almost equally rounded at both ends, and has a pure white colour. These Petrels copulate on the water, in the same manner as the Hyperborean Phalarope. By the beginning of August the young follow their parents to sea, and are then scarcely distinguishable from them. During incubation, they remain in the burrows, or at their entrance, rarely going to seek for food before the dusk.

“On wing, this species is more lively than the Forked-tailed, but less so than the Common Stormy Petrel. It keeps its wings nearly at right angles with its body, and makes considerable use of its feet, particularly during calm weather, when it at times hops or leaps for several feet, or pats the water, whilst its wings are extended upwards with a fluttering motion, and it inclines its head downwards to pick up its food from the water, and I have observed it immerse the whole head beneath the surface, to seize on small fishes, in which it generally succeeded. It can walk pretty well on the deck of a vessel, or any other flat surface, and rise from it without much difficulty. Its notes are different from those of the Forked-tailed Petrel, and resemble the syllables *kee-ree-kee-kee*. They are more frequently emitted at night than by day. This species, like the other, feeds on mollusca, small fishes, crustacea, marine plants, excrements of cetaceous animals, and the greasy substances thrown from vessels. When caught, they squirt an oily substance through the nostrils, and often disgorge the same.”

A few specimens have been obtained in England. I have not met with any statement indicating its occurrence in Scotland. Mr. Thompson does not consider himself authorized to admit it as Irish, but remarks that there can be little doubt, from the distribution of the bird, of its occasionally visiting that country.

THALASSIDROMA PELAGICA. THE COMMON STORM-PETREL.

MOTHER CAREY'S CHICKEN. STORM-FINCH. LITTLE PETREL. WATER-WITCH.
ALAMOUTI. ASILAG. SPENCY. SEA SWALLOW. MITTY.

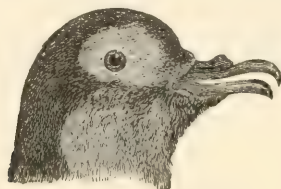


FIG. 89.

Procellaria pelagica. Linn. Syst. Nat. I. 212.

Procellaria pelagica. Lath. Ind. Ornith. II. 826.

Stormy Petrel. Mont. Ornith. Dict. and Suppl.

Petrel tempête. *Procellaria pelagica.* Temm. Man. d'Ornith. II. 810.

Common Storm-Petrel. *Thalassidroma pelagica.* Selby, Illustr. II. 538.

Procellaria pelagica. Stormy Petrel. Jen. Brit. Vert. Anim. 285.

Thalassidroma pelagica. Bonap. Comp. List, 64.

Tail slightly rounded; bill and feet black; plumage greyish-black above, sooty-brown beneath; secondary coverts margined externally with dull greyish-white; feathers of the rump and sides of abdomen white; upper tail-coverts white, broadly tipped with black; length nearly six inches. Young of lighter tints, with the feathers edged with reddish-brown.

MALE IN WINTER.—This species, the smallest of its genus, and of the entire series of sea-birds, bears, not only in its form and colours, but also in its mode of flying, a great resemblance to some swallows. Its body is slender, the neck short, the head oblong and compressed. The bill is shorter

than the head, slender, much compressed, decurved at the end, and acute. The upper mandible with its dorsal line concave and ascending to the nostrils, then suddenly deflected, afterwards for a short space straight, finally arcuate and much decurved, the ridge carinate, with its sides sloping, rising into a tube for the nostrils, beyond which it is narrowed, the sides convex, and separated from the ridge by a groove ending before the point, the edges thin, approximating toward the end so as to form a deep groove, the unguis narrow, decurved, and pointed; the lower mandible with the intercrural space narrow and pointed, the sides erect at the base, inclinate toward the end, their lower outline slightly decurved, ending in a slight prominence, beyond which the dorsal line is declinate and slightly concave, the edges approximating so as to come in contact near the tip; the gape-line sinuous.

The mouth is of moderate width, the palate convex, with two lateral ridges, the upper mandible with a medial prominent line. The tongue, five-twelfths and a half in length, is much flattened, at the base emarginate and serrulate, horny and tapering at the point. The œsophagus, an inch and six-twelfths long, has a nearly uniform width of two-twelfths and a half, and opposite the heart expands into an enormous sac, which gradually enlarges to the width of seven-twelfths, forming a broad rounded fundus, then curves forwards on the right side, and terminates in a very small gizzard. This enlarged part, over which the gastric glandules are dispersed at considerable intervals, is the proventriculus; its length to the fundus is an inch and a twelfth, but along its greater curve nearly two inches. The stomach is very small, a quarter of an inch in length, and nearly of the same breadth, elliptical, with rather strong muscles, roundish tendons, and rugous epithelium. It is resupinate, or reversed in its position, so that the duodenum comes off from the left side, and in order to gain its usual situation curves upwards and to the right, behind, and in contact with the upper surfaces of the lower, then forms the usual duodenal fold, on receiving the biliary duct curves backward beneath the kidneys, and forms several convolutions, which terminate above the proventri-

culus. It now becomes much narrower, and passes directly backward, ending in the rectum, which is four-twelfths in length, nearly one-twelfth in width, but enlarges into a globular cloaca nearly three-twelfths in diameter. The cœca are a twelfth and a quarter in length, and nearly half a twelfth in breadth. The entire length of the intestine is nine inches, its width from two-twelfths to three-fourths of a twelfth.

The nostrils are dorsal, submedial, and open abruptly in the form of two approximated tubes. The eyes small. The feet are of moderate length; the tibia bare for four-twelfths of an inch; the tarsus very slender, rather long, flat before, rather sharp behind, covered with subhexagonal scales. The hind toe extremely minute, with a conical acute claw; the anterior toes long and slender, the outer a little shorter than the middle, the second with twelve scutella on the second joint, the third twenty-eight, the fourth twenty-eight. The interdigital membranes emarginate. The anterior claws small, slightly arched, compressed, pointed.

The plumage is full, very soft, and blended; the feathers ovate. The wings are very long, when closed extending about half an inch beyond the tail, narrow and pointed, with twenty-four quills; the primaries tapering, but obtuse; the second longest, the third scarcely shorter, the first a quarter of an inch shorter, and a little longer than the fourth; the secondaries curved inwards, short, rounded, obliquely emarginate, the inner short. The tail is broad, straight, slightly rounded, of twelve broad abrupt slightly emarginate feathers, of which the medial is a quarter of an inch longer than the lateral.

The bill and feet are black, as are the eyes. The general colour of the plumage is greyish-black above, with a tinge of greyish-brown on the forehead, sooty-brown beneath. The secondary coverts are more tinged with grey, and are margined externally toward the end and at the tip with greyish-white. A broad band of white passes across the rump, including the tail-coverts, which, however, are black at the end, and extending to the hind part of the sides beneath. The feathers under the tail are also white at the base, as are the tail-feathers, although that colour does not appear until

the feathers are put aside. The axillar feathers, and some of the lower wing-coverts, are white toward the end.

Length to end of tail $5\frac{1}{2}$ inches; extent of wings $13\frac{1}{2}$; bill along the ridge $\frac{7}{12}$, along the edge of lower mandible $\frac{8}{12}$; wing from flexure $4\frac{1}{2}$; tail $2\frac{4}{12}$; tarsus $\frac{1}{2}$; hind toe and claw $\frac{1}{2}$; second toe $\frac{7}{12}$, its claw $\frac{1}{2}$; third toe $\frac{8}{12}$, its claw $\frac{2}{12}$; fourth toe $\frac{9}{12}$, its claw $\frac{1}{2}$.

FEMALE.—The female is similar to the male, but somewhat smaller.

Length to end of tail $5\frac{0}{12}$; extent of wings $13\frac{1}{4}$.

VARIATIONS.—Adult birds, having the plumage fresh, differ very little in colour. In that state they have the upper parts of a glossy greyish-black, the secondary quills distinctly edged with white toward the end, the lower tail-coverts about a fourth of an inch shorter than the middle tail-feathers, which exceed the lateral by about half an inch. But in summer, when the feathers have been worn, the tail is often almost or entirely even, the lower coverts of the same length; the secondary quills have no white, and they, as well as the wing-coverts, have assumed a brownish colour. The white feathers of the rump have the shafts generally, but not always black. Considerable differences are observed in size. Thus, in four specimens before me, the wing is $4\frac{1}{2}$, $4\frac{0}{12}$, $4\frac{1}{2}$, $5\frac{1}{2}$ long; the tarsus $\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{0}{12}$; the middle toe and claw $\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{0}{12}$. It appears that, like the Skua, it sometimes has a few white feathers; at least, an individual caught off the Isle of May, in June, 1832, had four on the breast; and another from Shetland, in my collection, has one on the nape.

HABITS.—The Petrels have received their name for a habit, common to them and the smaller Gulls, of letting their legs hang down, and patting the water with their feet, when hovering over it for the purpose of picking up some article of food. On such occasions they seem to walk upon the sea, although, in fact, entirely sustained by their outspread wings and on this account they have been likened to the Apostle Peter, whose miraculous, though, through want of faith, only

partially successful attempt to walk on the sea of Gennesaret is recorded in the Gospels. Petrel, then, is the diminutive of Petrus, or Peter. But the Petrels neither walk on the water, nor are otherwise than momentarily and in part supported by it. In the open ocean, they are met with by day as well as by night; but when breeding, they are seen in the neighbourhood of their haunts, that is, to the distance of twenty or more miles around, chiefly in the dusk and dawn, and during the day remain concealed in their holes. Stormy weather does not prevent their coming abroad, nor are they less active during calms. When the waves are high and the wind fierce, it is pleasant, even amidst the noise of the storm and the heavings of the vessel, to watch the little creatures as they advance against the gale, at the height of scarcely a foot above the surface of the water, which they follow in all its undulations, mounting to the top of the wave, there quivering in the blast, and making good their way by repeated strokes of their long narrow wings, then sliding down the slope, resting a moment in the shelter of the advancing mass of water, gliding up its side, and again meeting on the summit the force of the rude wind that curls the wave and scatters abroad its foam-bells. I have seen them thus advancing apparently with little labour, and in such cases less effort, I think, must be required than when they have to encounter a gale before it has blown long enough to raise the waves, which afford it partial shelter. Their manner of flying is similar to that of the smaller Gulls, that is, they glide lightly along with expanded wings, sailing or gliding at intervals, and then plying their feathery oars. It is only when picking up their food that, with upraised wings, they hover over the spot, and pat the water with their feet; although many persons have described this as their ordinary mode of progression. In calm weather, when the sea is smooth, they hover, skim, and wheel around, much in the manner of Swallows, though with less velocity. They have, in fact, a striking resemblance to these birds, and certainly merit the name of Sea-Swallows at least as much as the Terns. It is only among the Outer Hebrides that I have seen this species, and there but in small numbers, so that my opportunities of observing its habits

have not enabled me to present a full account of them. This deficiency, however, is supplied by other observers.

Mr. Martin, who visited St. Kilda in the summer of 1697, gives the following brief notice of it, accompanied by a figure:—"The Assilag is as large as a Lint-White; black bill, wide nostrils at the upper part, crooked at the point like the Fulmar's bill. It comes about the twenty-second of March, without any regard to winds, lays its egg about the twentieth of May, and produces the fowl towards the middle of October; then goes away about the end of November." Brief as it is, this account is incorrect with regard to the time at which the young is produced.

Montagu's account of its habits is as follows:—"Stormy Petrels fly in small flocks, and are the only species of the feathered creation that dare venture so far from shore as the middle of the Atlantic ocean, where they appear to find subsistence, and only retire during the breeding season. In a voyage to America we noticed two or three small congregations, and these generally followed the ship for several hours, flying round, and playing about in the manner of Swallows, frequently stooping to pick up bits of biscuit thrown over for the purpose. Fortunately, however, we looked in vain each time for the accompanying tempest, which these bewitched chickens of Mother Carey were supposed to forbode. Sailors, naturally superstitious, have always considered this little bird the forerunner of stormy and tempestuous weather, as the appearance of the Kingfisher denoted fine weather, denominated the halcyon days by the ancients. These auguries, however, may be founded in fact; for as the Kingfisher is only seen on the sea-shore, or on the coasts of bays and estuaries in the temperate months, so the Petrel, whose rapid wing outstrips the wind, flies from the storm, and in its passage over the vast Atlantic may truly warn the mariner of the approaching tempest.

"It is no uncommon occurrence to find birds of this species dead in places contiguous to the coast, and sometimes remote. Such we have had brought to us several times in the months of October and November. A specimen.

was killed near Bath, and one is said to have been shot so far inland as Derbyshire. From these circumstances it is understood that they sometimes fly across the land; but what occasions the annual mortality which has been noticed in different parts is difficult to determine. Perhaps illness is the occasion of their flying to the shore, to make a short cut across promontories, or, in a weak state, to avoid a storm or an opposing wind; and being unable to proceed far, they are found dead on land."

He further states that, as it breeds on the rocky coast of the north of Cornwall, and, according to Dr. Fleming, in all the islands of Zetland, it is truly indigenous, although not generally dispersed.

Mr. Hewitson, who visited Shetland in search of "rarities" for his beautiful and most accurate British Oology, found it breeding in great numbers on several of the islands, principally Foula, the north of Unst, Papa, and Oxa. At the last of these it had not arrived on the 31st of May; and on the 16th of June, although it had revisited its breeding-places in Foula, it had not yet begun laying. Visiting Oxa again, on the 30th of June, he found them just beginning to lay their eggs. "In Foula they breed in the holes in the cliff, at a great height above the sea; but here, under stones which form the beach, at a depth of three or four feet or more, according to that of the stones, as they go down to the earth beneath them, on which to lay their eggs. In walking over the surface, I could hear them, very distinctly, singing in a sort of warbling chatter, a good deal like Swallows when fluttering above our chimneys, but harsher; and in this way, by listening attentively, was guided to their retreat; and, after throwing out stones, as large as I could lift, on all sides of me, seldom failed in capturing two or three, seated on their nests, either under the lowest stone or between two of them. The nests, though of much the same materials as the ground on which they were placed, seemed to have been made with ease: they were of small bits of stalks of plants, and pieces of hard dry earth. Like the rest of the genus, the Stormy Petrel lays invariably one egg only. During the day-time they

remain within their holes; and though the fishermen are constantly passing over their heads, the beach under which they breed being appropriated for the drying of fish, they are then seldom heard, but toward night become extremely querulous, and, when most other birds are gone to rest, issue forth in great numbers, spreading themselves far over the surface of the sea. The fishermen then meet them numerously, and, though they have not previously seen one, are sure to be surrounded by them upon throwing pieces of fish overboard."

The egg is nearly elliptical, the small end being little narrower or less rounded than the other, with a rather thick shell, somewhat roughish, without gloss, white, with a belt of minute dark reddish dots at the large end. The average size is an inch and a twelfth and a half in length, tentwelfths in breadth. I have not seen any without some dots at the large end, although there is seldom a distinct belt there.

The food of this species is said by authors to consist of oily and fatty substances, small crustacea and mollusca, fishes, animal matter of any kind, garbage thrown from ships, and even sea-weeds. It frequently appears in the wake of vessels, especially before or during stormy weather, but also when it is calm; and then picks up portions of animal and vegetable substances, even fragments of biscuits, that are thrown to it. But, generally, its stomach and gullet are found to contain oily matter, which, on being seized, it vomits, like the other species of this family.

The extent of distribution of this species is not ascertained, as by mariners it is confounded with others; but it has been observed on the coasts of most parts of Europe, on the Atlantic, especially on the banks of Newfoundland, and in a few places on the eastern coast of North America. In Britain, although the northern isles are those to which it chiefly resorts to breed, it has been found occasionally everywhere along the coast. It is very remarkable that in all the places where it has been found breeding, as in Shetland, Orkney, and St. Kilda, it disappears after its young are reared, and does not return until the beginning of next

summer, but seems to reside on the open sea during winter. In Ireland, according to Mr. Thompson, it "is to be met with at all seasons about some parts of the coast, and breeds in several of the islets."

It is rather surprising to what an extent destruction is caused to this species by gales and hurricanes, dead or dying birds being often found on such occasions, not only on or near the coast, but far inland. The continued prevalence of a strong sea-wind occasionally drives them in great numbers to the coast. Thus Mr. Thompson relates that, in October 1843, hundreds appeared about Anstruther, in Fifeshire, after a storm from the east. Mr. Harry D. S. Goodsir, his informant, stated that "some of them appeared about the town; but as the storm died away, they gradually went farther out to sea. He one day followed them, and in a heavy sea captured thirty, by flinging pieces of the liver of cod-fish over the gunnel of the boat, when several fighting for the food were caught at a single sweep of a landing-net. Single birds, too, were captured by the hands of the boatmen. The following day my friend took about fifty in the same manner, and many more might have been procured."

YOUNG.—The young, which do not leave the nest until fledged and able to fly, are similar to the adult, with this difference, that the feathers of the upper parts are of a lighter tint, and margined with reddish-brown.

LARINÆ.

GULLS AND ALLIED SPECIES.

THERE are differences of opinion as to the species of *Mercatores* that ought to be included in the group of which the genus *Larus* is to be taken as the type, some including in it the Terns and Petrels, others considering these latter as forming two families equivalent to that of the Gulls. As usual in such cases "a great deal might be said on both sides of the question." In the present state of ornithology it is not of great importance, there being no criterion for distinguishing groups of any kind,—ordinal, or sub-ordinal. In this family I include all birds that present the following characters :—

Body more or less compact, generally light ; neck of moderate length ; head ovate, of ordinary size. Bill generally shorter than the head, straight, compressed, somewhat declinate at the end ; upper mandible with the ridge convex, the nasal groove rather long, the edges sharp and direct, the tip declinate, rather acute ; lower mandible with the angle long and very narrow, an angular prominence at the commencement of the dorsal line, which is more or less concave and ascending. Mouth of moderate width, opening to beneath the eyes ; palate flat, with two prominent ridges, and four series of reversed papillæ. Tongue fleshy, papillate at the base, rather narrow, tapering to a narrowly rounded point, and horny beneath. Œsophagus very wide ; proventriculus dilated ; stomach rather small, elliptical, moderately muscular, with large radiated tendons, and very dense, thick, longitudinally ridged epithelium ; intestine rather long, narrow ; cæca very small, cylindrical.

Eyes rather small ; nostrils oblong or linear, pervious ; aperture of ear moderate. Legs short or of moderate length ; tibia bare to some extent ; tarsus rather short, somewhat compressed, with numerous, much curved scutella ; hind toe very small and elevated ; middle toe longest ; fore toes of moderate length, slender, interdigital membranes full, their margins only a little concave ; claws generally small, arcuate, more or less compressed, acute.

Plumage very full, moderately close, elastic, soft, and blended, on the back and wings rather compact ; the feathers generally oblong and rounded, on the fore part of the head short. Wings very long, rather broad, pointed. Tail rather short, even, rounded, cuneate, or forked, of twelve broad feathers.

These birds inhabit the shores of the ocean, along which they wander in search of food, the larger species preying on fishes, crustacea, and mollusca, and occasionally feeding on the carcasses of cetacea, seals, and other marine mammalia, while the smaller feed chiefly on fishes, articulated and molluscous animals. They all pursue shoals of fishes in the open sea, often to great distances from the shores, and many of them make occasional excursions over the land, especially in stormy weather. They walk with considerable ease, wade in shallow pools or by the shore, swim moderately well, and sit very lightly on the water, but are incapable of diving. Their flight is buoyant, in general moderately rapid, easy, gliding, and protracted. Hovering over the water, they sometimes plunge headlong upon their prey, but more frequently seize it only when it is near enough the surface to render it unnecessary to immerse more than the bill and head. When thus looking for food, they sustain themselves by a quivering movement of their upstretched wings, and occasionally by patting the water with their feet. They generally congregate, often in vast numbers, in particular places, as headlands, cliffs, rocky islands, some of them in marshes, or upon islets in lakes, for the purpose of breeding. Their nests are bulky or rudely constructed, and they lay from two to four, seldom five, large oval eggs, of an olivaceous or greyish colour, patched or spotted with dusky. The

young, at first clothed with close variegated down, very soon walk, and readily take to the water, but, if not disturbed, generally remain about the nest until they are able to fly.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. LESTRIS. SKUA.

Bill shorter than the head, nearly as broad as high at the base, compressed toward the end, with the tip decurved; upper mandible cerate, with the ridge broad, the nostrils linear-oblong; lower mandible with the crura broad and erect, the angle little prominent, the tip compressed. Feet of moderate length, rather stout; tarsus moderately compressed, with anterior decurved scutella, the posterior scales convex and prominent; claws much curved, acute. Wings very long, pointed; tail of moderate length, of twelve feathers, of which the two medial are more or less elongated.

1. *Lestris Catarractes*. *Common Skua*. Bill two inches and a quarter in length; tarsus two inches and a half; middle tail-feathers scarcely an inch longer than the rest. Bill and feet black; upper parts dark greyish-brown, streaked with brownish-yellow.

2. *Lestris Pomarinus*. *Pomarine Skua*. Bill an inch and three-fourths in length; tarsus two inches, very rough behind with pointed scales; middle tail-feathers about two inches longer than the rest. Bill greenish-grey; feet black; upper parts blackish-brown; throat and lower parts white.

3. *Lestris Richardsonii*. *Richardson's Skua*. Bill an inch and a third in length; tarsus an inch and two-thirds; middle tail-feathers three inches longer than the rest, tapering moderately until near the end, when they rapidly narrow to a fine point; feet black.

4. *Lestris parasitica*. *Parasitic Skua*. Bill an inch and a twelfth in length; tarsus an inch and a half; middle tail-feathers six or more inches longer than the rest, tapering to a fine point.

GENUS II. CETOSPARACTES. WHALE-GULL.

Bill short, robust, compressed, straight ; upper mandible with the ridge broadly convex, the nostrils medio-basal, linear-oblong, wider anteriorly, covered above and behind with a sloping thin-edged plate, the edges thin, direct, the tip slightly decurved, obtuse ; lower mandible with the crura somewhat convex, their lower outline straight, forming a very slight prominence at the commissure, the dorsal line ascending, the edges thin and somewhat inflected, the tip narrow, rather obtuse. Legs very short ; tibia bare to a small extent ; tarsus very short, little compressed, covered anteriorly with nearly straight scutella, laterally and behind with very small prominent scales ; hind toe very small, little elevated, with a stout decurved claw ; fore toes short, prominently papillate beneath, the latter thickly margined ; interdigital membranes emarginate ; claws strong, well curved, rather acute. Wings very long, rather broad, pointed. Tail of moderate length, a little rounded.

1. *Cetosparactes eburneus*. *Ivory Whale-Gull*. The only species. Plumage white.

GENUS III. RISSA. KITTIWAKE.

Bill rather short, moderately stout, compressed, nearly straight ; upper mandible with the ridge convex, the nostrils sub-medial, linear-oblong, wider anteriorly, covered above and behind with a sloping, convex, thin-edged plate, the edges thin, direct, the tip slightly decurved, narrow, rather acute ; lower mandible compressed, with the lower outline of the crura slightly concave, forming a slight prominence at the commissure, the dorsal line distinctly concave, and scarcely ascending, the edges thin and inflected, the tip compressed and rather acute. Legs very short ; tibia bare to a moderate extent ; tarsus very short, considerably compressed, covered anteriorly with decurved scutella, laterally and behind with small nearly flat scales. Hind toe extremely diminutive, with a minute claw, obsolete in old individuals ; fore toes of

moderate length, flattened beneath; interdigital membranes slightly emarginate; claws rather small, compressed, moderately arched, rather acute. Wings very long, rather narrow, pointed. Tail of moderate length, even.

1. *Rissa tridactyla*. *Black-footed Kittiwake*. The only species. White, the back and wings light bluish-grey; tips of five outer primaries and outer web of first, black.

GENUS IV. LARUS. GULL.

Bill of moderate length, stout, straight, compressed, higher near the end than at the base, decurved at the end; upper mandible with the ridge rather broad, convex, the nostrils medio-basal, linear-oblong, wider anteriorly, covered above and behind with a sloping thin-edged plate, the edges very thin, direct, the tip narrow, obtuse; lower mandible much compressed, the lower outline of the crura concave, forming an obtuse angle at the commissure, the dorsal line ascending, somewhat concave, the edges very thin and somewhat inflected, the tip narrow, but obtuse. Legs of moderate length, slender; tibia bare for a short space; tarsus rather short, somewhat compressed, covered anteriorly with numerous, much-curved scutella, laterally with angular scales, posteriorly with numerous small rectangular scales; hind toe very small, and elevated; fore toes of moderate length, slender; interdigital membranes with the margin a little concave; claws small, slightly arcuate, obtuse. Wings very long, rather broad, pointed. Tail rather short, even, or slightly rounded.

1. *Larus marinus*. *Great Black-backed Gull*. Bill two inches and two-thirds along the ridge, which is much decurved, one inch high at the angle, which is prominent; tarsus three inches long; wings slightly surpassing the tail. Bill yellow, with a bright red patch on the lower mandible; plumage white; the back and wings greyish-black, tinged with purple; the quills largely tipped with white.

2. *Larus fuscus*. *Lesser Black-backed Gull*. Bill two inches along the ridge, eight-twelfths high at the angle, which is moderately prominent; tarsus two inches and a half long;

wings about two inches longer than the tail. Bill yellow, with an orange-red patch toward the end ; tarsi and toes yellow ; plumage white ; the back and wings blackish-grey, tinged with purple ; the quills tipped with white.

3. *Larus argentatus*. *Herring Gull*. Bill two inches and a fourth along the ridge, which is much decurved toward the end, nine-twelfths high at the angle, which is prominent ; tarsus two inches and a half long ; wings surpassing the tail by an inch and a half. Plumage white ; back and wings light bluish-grey ; quills largely tipped with white, the outer six in part black, two of them with a large white spot toward the end.

4. *Larus glaucus*. *Glaucous Gull*. Bill two inches and three-fourths along the ridge, which is moderately decurved toward the end, ten-twelfths high at the angle, which is prominent ; tarsus three inches long ; wings about an inch shorter than the tail ; total length from twenty-six to thirty-two inches. Plumage white ; back and wings light bluish-grey ; quills all white at the end.

5. *Larus leucopterus*. *White-winged Gull*. Bill nearly two inches along the ridge, which is moderately decurved toward the end, eight-twelfths high at the angle, which is little prominent ; tarsus two inches and a half long ; wings a little longer than the tail ; total length from twenty to twenty-five inches. Plumage white ; back and wings light bluish-grey ; quills all white at the end.

6. *Larus canus*. *Green-billed Gull*. Bill greyish-green, or greenish-yellow, an inch and a half along the ridge, which is gently decurved toward the end, five-twelfths high at the angle, which is little prominent ; tarsus two inches long ; wings surpassing the tail by two inches. Plumage white ; back and wings light bluish-grey ; the quills largely tipped with white, the outer five in part black, two of them with a large white spot toward the end.

GENUS V. GAVIA. MEW.

Bill rather long, or of moderate length, slender, much compressed, slightly decurved at the end, acute ; upper man-

dible with the ridge convex at the base, narrow beyond the nostrils, which are sub-basal, long, linear, a little wider anteriorly, margined above with a sloping thin-edged membrane, the edges very thin, inclinate, the tip narrow, rather acute; lower mandible very much compressed, the lower outline of the crura a little concave anteriorly, forming a slight angle with the dorsal line, which is nearly straight, the edges very thin and inflected, the tip rather acute. Legs of moderate length, rather slender; tibia bare for one-third; tarsus rather short, compressed, anteriorly covered with numerous curved scutella, laterally with angular scales, behind with numerous small rectangular scales; hind toe very small and elevated; fore toes of moderate length, slender; interdigital membranes with the margin concave; claws small, slightly arched, rather acute. Wings very long, rather narrow, pointed. Tail of moderate length, even or emarginate.

1. *Gavia Atricilla*. *Leaden-grey-hooded Mew*. Bill rather stout, an inch and three-fourths long, rich carmine, as are the feet; outer quills black, the next five with that colour gradually diminishing, their tips white, those of the outer two excepted. In summer the head and part of the neck dark leaden-grey.

2. *Gavia ridibunda*. *Brown-hooded Mew*. Bill an inch and a third in length, rich carmine, as are the feet; outer four quills and their coverts white, the first quill with the greater part of its outer margin, the tip, and a narrow band along its inner edge, black; on the next five, no black on the outer web, that on the tip more extended, the black band on the inner edge broader, the tips white, those of the outer two excepted. In summer, the head and part of the neck deep brown, becoming brownish-black behind.

3. *Gavia capistrata*. *Brown-masked Mew*. Like the last, somewhat less. In summer, a light-brown mask, not extending far beyond the eyes.

4. *Gavia Sabini*. *Sabine's Mew*. Bill black, at the end yellow, an inch in length; tarsus an inch and a half; wings two inches longer than the tail, which is forked. In summer, the head and upper part of the neck all round blackish-grey.

5. *Gavia Bonapartii*. *Bonaparte's Mew*. Bill an inch

and a third in length, black ; tarsus an inch and a third ; wings an inch and two-thirds longer than the tail, which is even at the end. In summer, the head and throat greyish-black.

6. *Gavia minuta*. *Little Mew*. Bill scarcely an inch in length, black ; tarsus an inch long ; wings three-fourths of an inch longer than the tail, which is slightly rounded. In summer, the head and upper part of the neck all round greyish-black.

GENUS VI. RHODOSTETHIA. ROSY-GULL.

Bill short, rather slender, compressed ; upper mandible with the dorsal line arcuato-decurvate toward the narrow tip ; lower mandible with the angle slight, the dorsal line concave, the tip small ; legs short ; bare part of tibia very small ; tarsus rather stout, anteriorly scutellate, rough behind ; first toe short, with a large curved claw ; fore toes moderate ; interdigital membranes entire ; claws rather large, arched, compressed, acute ; wings long, rather narrow, pointed ; tail cuneate.

1. *Rhodostethia Rossii*. *Ross's Rosy-Gull*. The only species. Bill black ; feet vermilion ; fore part of back and both surfaces of wings pale bluish-grey ; lower parts white, tinged with rose-colour.

LESTRIS. SKUA.

A group of birds nearly allied to the Petrels, and more intimately to the Gulls, from which they are readily distinguishable by their bolder and somewhat falconine aspect and habits, has generally been considered as forming a single genus, to which some give the name of *Cataractes*, others that of *Lestris*. They who divide the Gulls into two or more series ought not, perhaps, to object to an arrangement of the birds in question into two genera, especially if they consider them as forming a sub-family. Considering that they scarcely merit generic distinction, and that no other very obvious external character than that presented by the form and elongation of the two middle feathers of the tail can be adduced, we may, notwithstanding the method of rather minute division followed in this work, refer them to a single genus.

The body is of a compact and robust form ; the neck of moderate length ; the head large, ovate, anteriorly narrowed. Bill shorter than the head, about as broad as high at the base, compressed toward the end, straight, with the tip decurved ; upper mandible cerate for half its length, with the ridge broad and rounded, the nasal space covered by a thin plate ; nostrils linear-oblong, wider anteriorly, pervious ; edges sharp and inflected ; tip very strong, laterally convex, much decurved, thin-edged, rather obtuse ; lower mandible with the intercrural space long and narrow, the branches broad and erect, the prominence formed at their junction slight, the edges sharp and inflected, the tip compressed, thin-edged, obtuse.

Mouth rather wide and dilatable ; tongue broadly channelled above, contracted and induplicate toward the end ; œsophagus very wide ; stomach small, moderately muscular,

with dense, rugous epithelium ; intestine rather short and wide, cœca rather long.

Eyes rather small, eyelids feathered. Feet of moderate length, rather strong ; tibia bare below ; tarsus moderately compressed, with anterior decurved scutella, the lateral and posterior scales convex ; hind toe elevated, very small, with a rather large, arcuate, acute claw ; anterior toes rather long ; interdigital membranes entire ; claws much curved, compressed, acute.

Plumage full, close, firm, on the back and wings compact. Wings very long, rather broad, pointed. Tail of twelve feathers, of which the two middle are elongated.

These birds are especially remarkable for their habit of pursuing and harassing Gulls and Terns, to cause them to disgorge a portion of their food, on which they seize as it falls from them. If they ever fish for themselves it must be seldom, as they who have had opportunities of watching or occasionally observing, have not recorded instances, although some allege that they feed on the carcasses of whales and other animals, especially fishes. Their flight resembles that of the Gulls, but is more bounding, and at the same time capable of being urged to much greater speed. The curvature of their claws must be intended for prehension, though they certainly do not seize upon the birds which they pursue.

There is difficulty in determining the correct generic appellation of these birds. I think, however, that as no accurate ideas of either generic or specific nomenclature were entertained before the time of Linnæus, we ought to adopt Illiger's name *Lestris*. "Skua" has been used by Mr. Selby as generic, and adopted by Mr. Thompson. "The Skua," or "Skua Gull," however, is properly a specific name, analogous to "The Knot" or "The Dunlin ;" and as *Lestris* means a robber, and a sea-robber is a "pirate," I should prefer the latter word.

LESTRIS CATARRACTES. THE COMMON SKUA.

SKUA GULL. BONXIE.

Larus Catarractes. Linn. Syst. Nat. I. 226.

Larus Catarractes. Lath. Ind. Ornith. II. 818.

Skua Gull. Mont. Ornith. Dict.

Stereocaire Catarracte. Lestris Catarractes. Temm. Man. d'Ornith. II. 729.
III. 494.

Common Skua. Catarractes vulgaris. Selby, Illustr. II. 514.

Cataracta Skua. Bonap. Comp. List, 63.

Bill two inches and a quarter in length, tarsus two inches and a half, rough behind, with small prominent scales; middle tail-feathers scarcely an inch longer than the rest, broad and rounded. Adult with the bill and feet black, the feathers of the neck acuminate; the general colour of the upper parts dark greyish-brown, streaked with brownish-yellow; primary quills brownish-black, with their shafts and basal parts white, there being a conspicuous patch of that colour on the wing; tail blackish-brown, white at the base, but that colour not apparent there.

ADULT IN SUMMER.—This bird approaches in size to the Herring Gull; but is of a more compact and robust form, having the body full, the neck of moderate length, the head large, broadly ovate, anteriorly narrowed.

The bill is shorter than the head, very stout, nearly as broad as high at the base, compressed toward the end, straight, with the tip decurved; the upper mandible with the dorsal line straight to the end of the cere, then much decurved, the ridge broad and rounded, with a shallow groove on each side, the nasal space covered by a thin plate, the sinus very short, broad, and feathered, the branches narrow and convex, the edges sharp and inflected, the tip very strong, laterally con-

vex, much decurved, thin-edged, rather obtuse; the lower mandible with the intercrural space long and narrow, the branches broad, erect, with an obliquely-ascending groove, and two ridges, their lower outline straight, the angle little prominent, the dorsal line ascending, straight, or very slightly convex, the edges sharp and inflected, the tip compressed, obtuse, thin-edged; the gape-line straight, at the end decurved.

The nostrils are linear-oblong, much wider anteriorly, five-twelfths long. Eyes rather small; eyelids feathered, with a bare crenulate margin. Feet of moderate length, rather stout; tibia bare for an inch; tarsus moderately compressed, with eighteen decurved scutella; the lateral and posterior scales small, roundish, convex, so as to be rough to the touch, especially those behind. The hind toe is elevated, very small, covered with scales, its claw rather large, compressed, acute, arcuate; anterior toes rather long, slender, the inner much shorter than the outer, and having twenty-two scutella, the middle toe with thirty-two, the outer with twenty-eight; the lateral toes margined externally with small prominent scales. The interdigital webs are nearly straight anteriorly, the inner a little convex. The claw of the inner toe is strong, compressed, acuminate, extremely curved; that of the middle toe less curved, and with its inner edge expanded; that of the outer toe much smaller, compressed, acute, and much curved.

The plumage is full, close, firm, and elastic, on the back and wings compact; the feathers ovate, those on the neck taper-pointed, with their terminal filaments stiffish, and somewhat silky. Wings very long, rather broad, pointed, and reaching almost to the end of the tail; the primaries rather broad, and tapering to a rounded point, the first longest, the second half an inch shorter, the rest rapidly decreasing; the outer secondaries incurved, broad, and rounded, the inner elongated and more narrowly rounded. The tail is of moderate length, of twelve rather broad abruptly rounded feathers, of which the outer are three-fourths of an inch shorter than those next the middle, which are also broadly rounded, and project nearly an inch.

The bill is black, tinged with greyish-blue; the iris brown; the feet black, the claws bluish-black. The ground colour of the plumage is deep greyish-brown; on the breast and abdomen passing into brownish-grey. On the upper part of the head the feathers are slightly tipped with yellowish-brown; on the neck their acuminate terminations are brownish-yellow; on the back a considerable portion of each is light reddish-brown, on the scapulars is a larger irregular variegated whitish patch. The wing-coverts are less marked; the primary coverts and quills are brownish-black, with their shafts white unless toward the end, and a large portion of their base of the same colour, which thus forms a conspicuous patch on the wing, but does not extend to the outer web of the outer quill, and is not apparent on the seventh. The secondaries gradually become lighter, the inner being brown. The tail-feathers are blackish-brown, white at the base, but that colour not apparent until the coverts are raised. On the lower parts the light greyish-brown feathers have a brownish-red medial and terminal mark, which beyond the middle of the breast becomes more diffuse, and blended. The lower wing-coverts are dark brown. The white on the primaries forms a large patch, similar to that on the under surface of the wing in Buzzards and Eagles.

Length to end of tail 24 inches; extent of wings 55; wing from flexure $16\frac{1}{2}$; tail $7\frac{1}{4}$; bill along the ridge $2\frac{1}{4}$, along the edge of lower mandible $2\frac{7}{12}$, its height at the base $\frac{1}{12}$, at the knob $\frac{8}{12}$; tarsus $2\frac{1}{2}$; hind toe $\frac{5}{12}$, its claw $\frac{5}{12}$; second toe $1\frac{5}{12}$, its claw $\frac{9}{12}$; third toe $2\frac{4}{12}$, its claw $\frac{8}{12}$; fourth toe $2\frac{2}{12}$, its claw $\frac{6}{12}$.

HABITS.—From the hook-pointed strong bill, and curved acuminate claws of this bird, together with its compact form, one might suppose that its obvious analogy in structure to the rapacious birds would lead to a corresponding similarity of habits. The inference proves, in fact, to be in a great measure correct, for the Skua has much of the aquiline character, although it is not known to pounce on its prey and carry it off in its claws. On the other hand, it bears a great resemblance to the Gulls properly so called, both in form and

habits ; keeping its body nearly horizontal when standing, walking and running with quick steps, and having a light and buoyant flight, more rapid and direct, however, than that of the Gulls. Its voice resembles that of a young Gull, being sharp and shrill, and it is from the resemblance of its cry to that of the word *Skua* or *Skui* that it obtains its popular name.

This bird has seldom been met with on the coasts of England or Ireland, or even on those of the south of Scotland ; nor does it occur, in so far as I know, among the Hebrides, and but rarely even in the Orkneys. In the Shetland Isles, however, it was formerly not unfrequent, although even there it had but a few breeding-places. Several persons have supplied from their own observation various particulars relative to the habits of this remarkable bird. Of one of these, Dr. Edmondston, who has enjoyed the best opportunities of becoming familiar with it, has favoured me with the following notes :—

“The *Skua* is now become rare in Zetland, in consequence of proprietors permitting rapacious bird-collectors to shoot them indiscriminately during the breeding season. In Unst there is only one locality frequented by them, and in all the country there are not more than four or five. In the one alluded to, the colony had been reduced to a single pair some years ago. Since then it has been, through my instrumentality, efficiently protected, and now it reckons more than ten pairs. This is, I suppose, the most northern preserve in Great Britain, and as such, perhaps, deserves to be recorded. It is surprising that proprietors are in general so careless of the preservation of these ornaments of their properties and cheerers of these bleak and wild solitudes, which they possess in the wild fowl that frequent them, or will persist in shutting their eyes to the fact that if once a colony inhabiting a certain situation is extirpated, by a law of instinct very general and very imperative, it will never again be tenanted by the same species, although it may be numerous at no great distance. And nothing can be more easy or more just than to prevent depredations, whatever jurists may learnedly talk about *Fera natura*, or demagogues ignorantly or insidiously declaim

against riches and oppression. Why should men of warm hearts and clear heads expend all their sympathies on the poor, and reserve none for the rights and remedies of the rich? That system of ethics has yet to be promulgated which establishes that affluence is synonymous with happiness and vice, and indigence with misery and virtue.

“The Skua is hardy and easily tamed. He does not possess the habit of his congener the Arctic Gull, that of making some other water-birds not only cater fish but cook it for his table. He has a good beak and pinions of his own, and he disdains to *soarn* for the disgorgement of others. In some countries he is proscribed, as well as the Raven and Eagle, and a price set on his head, from the notion that he is injurious to young lambs; but this, I think, is incorrect. Small sea-birds he does occasionally attack and devour. In captivity he is gentle and affectionate, and will feed on almost anything. When offended he raises his wings and yelps in the manner of the Eagle, but his bearing is much more dignified and magnanimous. The nest is on the bare heath, the young two in number, and their colour like that of the Golden Eagle.

“They remain with us only during summer, but I hardly think they migrate to other countries, but roam over the ocean in quest of food, having no longer the tie of incubation to fix them to a circumscribed range, and this doubtless is the case with many other birds that leave at certain seasons particular countries, and yet are not found in others.”

The Rev. Mr. Low gives the following account of the Skua, as seen on the Island of Foula, to the westward of the Shetland Isles:—“As I approached the summits of the high mountains, I came near the Skua’s quarters, which are affixed on the very peaks. I no sooner approached but I was attacked with so great fury, that every one of those who were with me, as well as myself, were obliged to do him obeisance at every stroke. He beat my dog entirely out of the pit, insomuch that he was obliged to run in among our legs for shelter, and could not be forced out again, for though Bonxie, as he is called, had some regard for us while we kept together, on him he had no mercy, every whip he fetched him made his own

wings crack, and the dog crouch into the hollows of the moor, till we came up and relieved him. I followed one of them to some distance from the rest, which made me part good company, and received some rude salutes for my imprudence from three of these birds that made at me with the utmost rage. I defended myself the best way I could with my gun, fired several times at them, but, as none dropped, the report did not startle them in the least, but rather seemed to enrage them the more. When the inhabitants are looking after their sheep on the hills, the Skua often attacks them in such a manner that they are obliged to defend themselves with their cudgels held above their heads, on which it often kills itself."

He further states that it has a hoarse and strong cry, and lives much in the manner of the "Parasitic Gull," attacking the larger kinds of Gulls, as the other does the lesser; but never meddles with birds to destroy them, nor attacks the lambs on the island, but in its opposition to all formidable intruders protects them from the Eagle, who dares not venture to prey there during the breeding season. In gratitude for its services it was protected by a penalty of sixteen shillings and eightpence for every individual shot, and when met with at sea by the fishermen always had a share of whatever fish might be in the boat.

Captain Vetch's account in the fourth volume of the *Memoirs of the Wernerian Society*, agrees with the above:—"The Bonxie, or Skua Gull, I believe, in the British islands, breeds only in Shetland, and there only on three hills, the Snuke in Foula, Ronas, and Saxafjord, which are also the three highest. On Foula they seem to have taken exclusive possession of the Snuke. In its nature it appears to partake both of the nature of the Gull and Eagle tribes. On Foula it breeds generally about a height of 1300 feet, and nowhere but on the Snuke. It is easily tamed, and is, I understand, a very docile bird. I often observed it walking about within a few yards of the tent, and without fearing our approach. When, however, his nest is approached, he shows a determination to defend his possession with his life. Ravens, Eagles, Hawks, or other birds, are soon pursued from the

territory they inhabit. On approaching the nest an attack instantly commences ; male and female in rapid succession descend from a considerable height, with a velocity and noise truly startling ; horses, cattle, and sheep, are immediately put to flight, and receive no intermission of attack till well driven from the nest ; and if man, bent on sinister purposes, continues to brave the Bonxie's fury, he will seldom accomplish his aim without carrying away marks of war. The nest is a mere concavity in the ground ; the number of eggs two ; the month of breeding July. The young bird is a nimble, gallant little animal, and almost as soon as hatched leaves the nest. On the approach of danger he secretes himself in holes, or behind stones, with great art ; and when captured, at least makes a show of defence that is quite amusing. The number of these birds that annually breed at Foula probably does not exceed thirty pair."

Mr. Dunn, who visited the Shetland Islands in 1831 and 1833, and shot a considerable number of Skuas, states that several parties from the south, and the officers of a cutter stationed in Rona's Voe for two or three months, had almost extirpated them in that part. He says he once "saw a pair completely beat off a large Eagle from their breeding-place on Rona's Hill. The flight of the Skua is more rapid and stronger than that of any other Gull. It is a great favourite with the fishermen, frequently accompanying their boats to the fishing-ground or haaf, which they consider a lucky omen ; and in return for his attendance they give it the refuse of the fish which are caught. The Skua Gull does not associate in groups, and it is seldom that more than a pair are seen together. The nest is constructed amongst the heath or moss ; the female mostly laying two eggs, but sometimes three."

YOUNG.—The young differ very little from the adult, the feathers generally, being, however, more broadly margined with reddish-brown.

REMARKS.—One of the most remarkable circumstances relative to the history of this species is its occurrence in the

southern hemisphere, where it has been met with in the Straits of Magellan, and plentifully at Port Egmont in the Falkland Islands. It has not been recorded as occurring on the coasts of North America ; but in Iceland, Spitzbergen, and Nova Zembla, it is said to be indigenous. Specimens have also been procured on the western coasts of Europe, as far south as France.

LESTRIS POMARINUS. THE POMARINE SKUA.

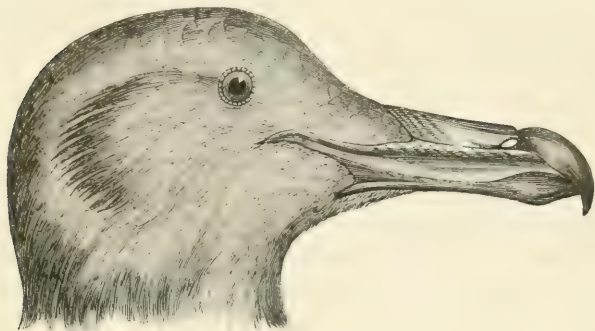


FIG. 90.

Cataractes Pomarinus. Steph. Sh. Zool. XIII 216.

Stercoraire Pomarin. Lestrus Pomarinus. Temm. Man. d'Orn. II. 793.

Pomarine Skua. Cataractes Pomarinus. Selby, Illustr. Brit. Orn. II. 517.

Lestrus Pomarinus. Bonap. Comp. List, 63.

Bill an inch and three-fourths in length ; tarsus two inches, very rough behind, with pointed scales ; middle tail-feathers about two inches longer than the rest, broad and abruptly rounded. Adult with the bill light greenish-grey ; the feet black ; the feathers of the neck with stiffish glossy filaments ; the general colour of the upper parts blackish-brown ; throat and lower parts white.

ADULT MALE IN SUMMER.—The Pomarine Skua, inferior in size to the Common, is also of a somewhat less robust form, though still strongly constructed, the body being full, the neck of moderate length, the head large, ovate, anteriorly narrowed.

The bill is shorter than the head, stout, nearly as broad

as high at the base, moderately compressed toward the end, straight, with the tip decurved; the upper mandible with the dorsal line straight to the end of the cere, then much decurved, the ridge broad and rounded, with a shallow groove on each side; the nasal space covered by a thin plate; the sinus very short, broad, and feathered; the branches narrow and convex; the edges sharp and inflected; the tip very strong, slightly convex on the sides, much decurved, thin-edged, pointed; the lower mandible with the intercrural space long and narrow; the branches broad, erect, convex, with an obliquely ascending groove at the base, their lower outline nearly straight, the angle little prominent, the dorsal line ascending, slightly concave, the edges sharp and inflected; the tip compressed, obtuse, thin-edged; the gape-line nearly straight, at the end decurved.

The nostrils are obovato-oblong, four-twelfths long. Eyes rather small; eyelids feathered, with a bare crenulate margin. Feet of moderate length, rather slender; tibia bare for three-fourths of an inch; tarsus moderately compressed, with twenty decurved scutella; the sides reticulated; the hind part very rough, with pointed deflexed scales. The hind toe extremely small and elevated, its claw large, arcuate, deflected, pointed; anterior toes of moderate length, the third longest, the fourth nearly as long; the inner with twenty scutella, the middle toe with thirty, the outer with twenty-eight. The interdigital membranes full, margined with small prominent scales. The claw of the inner toe strong, compressed, acuminate, uncinat; that of the middle toe less curved, and with its inner edge expanded; that of the outer toe much smaller, compressed, acute, and much curved.

The plumage is close, elastic, soft, and blended; on the neck with stiffish glossy barbs; on the back and wings rather compact. Wings very long, rather broad, pointed; primary quills tapering, rounded at the tip, the first longest; secondary quills rather short, rounded. Tail of moderate length, the feathers broad and rounded, the two middle two inches longer.

Bill bluish-grey, tinged with green, dusky at the end.

Feet black ; the upper half of the tarsus greyish-blue. Upper part and sides of the head blackish-brown ; upper part of neck all round yellowish-white ; the rest of the neck white, barred with dusky, each feather with two bars ; lower parts white ; the sides, abdomen, and lower tail-coverts barred with brownish-black. Back and wings brownish-black ; quills and tail-feathers white on the inner web toward the base.

Length to end of tail 22 inches ; wing from flexure 14 ; tail $6\frac{3}{4}$; bill along the ridge $1\frac{10}{12}$; tarsus 2 ; middle toe $1\frac{1}{2}$, its claw $\frac{7}{12}$.

FEMALE.—Similar to the male. One figured by Mr. Audubon measured :—

Length $20\frac{1}{4}$ inches ; extent of wings 48 ; wing from flexure 14 ; tail $6\frac{2}{12}$; bill along the ridge $1\frac{9}{12}$, along the edge of lower mandible $2\frac{1}{2}$; tarsus $2\frac{1}{12}$; middle toe $1\frac{2}{12}$, its claw $\frac{8}{12}$.

HABITS.—This handsome bird inhabits the arctic seas, extending as far southward as Nova Scotia, and along the coasts of Europe beyond the British Channel. The young, M. Temminck says, occasionally stray to the lakes of Germany and Switzerland. It does not appear to be permanently resident in Britain, or to have been found breeding there ; but considerable numbers must frequent our coasts in autumn, winter, and spring, as many are recorded to have been seen, and not a few killed, in various parts of Scotland and England. It is not mentioned by my correspondent, Dr. Edmondston, or by Mr. Dunn, as occurring in Shetland. In Orkney it must be rare, as only one specimen is recorded by Messrs. Baikie and Heddle as having been obtained there. I have seen it several times, and once shot at it, near Aberdeen. In the Firth of Forth it is not extremely unfrequent. Mr. Selby mentions cases of its occurrence on the coasts of Durham and Yorkshire, and Mr. Yarrell records others in various parts of England. Young birds are more frequently seen than adults, and are much less shy, though far more so than most Gulls.

It seems to feed chiefly, if not entirely, at the expense of the smaller Gulls, which it causes to disgorge their newly-obtained food, to be caught in its descent. Its flight is extremely rapid, ordinarily performed by rather quiet flaps of its long wings, but, in pursuit, by various movements, in the manner of a Hawk. It has not been seen to prey upon birds of any kind, nor even to strike with its wings or otherwise those which it chases for the contents of their gullet. Mr. Audubon saw it, in stormy weather, eat the fishes that had been cast ashore; and Dr. Richardson states that, in the arctic seas and northern inlets of Hudson's Bay, where it is not uncommon, it subsists on putrid fish and other animal substances thrown up by the sea, as well as on the matter which the Gulls disgorge when pursued by it.

YOUNG.—The young, in their first autumn, differ from the adult in more respects than in colouring. The tarsi are covered on the sides and behind with thin flat hexagonal scales; whereas in the adult, the scales on the sides are convex, like tubercles, and those behind conical. The middle tail-feathers are but slightly longer, and the feathers of the neck are of ordinary texture. The bill is much smaller, bluish-grey, with the tip blackish; the tarsi greyish-yellow, dusky for a short space above, and on the outer side below; toes and membranes blackish. The head and hind-neck greyish-brown, the feathers faintly margined with pale brown. The upper parts are dark brown, the feathers faintly margined with pale brown, the larger having two sub-terminal marginal spots. Quills and tail-feathers brownish-black, with their bases, a great part of the inner webs, and the shafts to near the end, white. Upper tail-coverts dark brown, with four or five bars of light brownish-red. Lower parts barred with dull yellowish-grey and greyish-brown, more conspicuously the abdominal feathers and lower tail-coverts; axillar feathers and lower wing-coverts barred dusky brown and white. The concealed part of the plumage white on the lower, greyish-white on the upper parts. The feet differently coloured in some individuals.

Length 19 inches; extent of wings 45; wing from flexure

$13\frac{3}{4}$; tail 6; bill along the ridge $1\frac{7}{12}$; tarsus 2; middle toe $1\frac{9}{12}$, its claw $\frac{5}{12}$.

PROGRESS TOWARD MATURITY.—M. Temminck represents middle-aged individuals as having the whole plumage of a very dark brown. A specimen of this kind in my collection has the appearance of being quite adult, its bill being very strong; its tarsi very rough, with convex and conical scales; and its claws strong and much curved. The bill has the tips black, the rest greyish above, dusky brown beneath; the feet and claws black. The plumage is of a uniform blackish-brown on the upper parts, of a lighter or sooty-brown on the lower; the bases and shafts, with part of the inner webs of the quills and tail-feathers, white. The feathers on the neck are stiffish and glossy.

Length 20 inches; wing from flexure $14\frac{1}{2}$; tail $6\frac{9}{12}$; bill along the ridge $1\frac{9}{12}$; tarsus 2; middle toe $1\frac{10}{12}$, its claw $\frac{6}{12}$.

LESTRIS RICHARDSONII. RICHARDSON'S SKUA.

ARCTIC GULL. MAN-OF-WAR BIRD. BOATSWAIN. TEASER. DUNG-BIRD.
 DUNG-HUNTER. DIRTEN ALLEN. SCOUTE-ALLEN. ALLEN. SCULL.
 BADOCK. FASGADIR.



FIG. 91.

Stercoraire Richardson. Lestrus richardsonii. Temm. Man. d'Ornith. III. 499.

Lestrus richardsonii. Richardson's Jager. Swains. and Richards. Fauna Bor. Amer. Part II. 433. Young.

Richardson's Jager. Lestrus richardsonii. Audub. Amer. Ornith. Biogr. III. 503. Young.

Arctic Gull. Mont. Ornith. Dict. Adult.

Black-toed Gull. Mont. Ornith. Dict. Young.

Arctic Skua. Cataractes parasiticus. Selby, Illustr. II. 520.

Lestrus richardsonii. Richardson's Skua. Jenyns, Brit. Vert. Anim. 282.

Lestrus richardsonii. Bonap. Comp. List, 63.

Bill an inch and a third in length, tarsus an inch and two-thirds ; middle tail-feathers three inches longer than the rest, broad, tapering moderately until near the end, when they rapidly narrow to a fine point ; feet black. Male in summer with the upper part of the head blackish-brown ; the nape and upper sides of the neck yellowish-white ; all the upper parts

blackish-brown, the quills darker, the primaries with the shafts white; anterior part of the forehead, the cheeks, throat, and lower part of the body white, the fore neck tinged with brown, the lower wing-coverts and tail-coverts dark greyish-brown. Female similar to the male.

MALE IN SUMMER.—Of an elegant form, with the body moderately stout, the neck of ordinary length, the head rather small, ovato-oblong, and narrowed before, this species is much inferior in size to the last, and somewhat less than the next, from which it is at once distinguishable by the comparative shortness of the two middle pointed tail-feathers.

The bill is shorter than the head, rather slender, nearly as broad as high, straight, with the tip decurved; the upper mandible with the dorsal line straight to the end of the cere, then, on the unguis, rising a little, and arcuato-decurvate, the ridge broad and somewhat convex, with a narrow groove on each side, the nasal space covered by a thin plate, the sinus short and feathered, the branches very narrow and convex, the edges sharp and inflected, the tip compressed, laterally convex, curved over the lower, thin-edged, but obtuse; the lower mandible with the intercrural space very long and narrow, the branches sloping outwards and a little convex, their lower outline slightly concave, so that a very slight prominence is formed at their junction, the dorsal line very short, ascending, and very slightly concave, the edges sharp and somewhat inflected, the tip narrow, sharp-edged, rather obtuse; the gape-line straight until near the end, when it becomes decurved.

The nostrils linear-oblong, wider anteriorly, placed nearer the tip than the base, pervious, submarginal. Feet rather short and slender, tibia bare for seven-twelfths of an inch; tarsus moderately compressed, with eighteen decurved scutella; the lateral and posterior scales small, oblong, convex, so as to be a little rough to the touch. The hind toe is extremely small and elevated, covered with small scales; its claw small, compressed, arched, acute; anterior toes of moderate length, slender, the inner much shorter than the outer, and having eighteen scutella, the third twenty-eight, the

fourth twenty-six ; the lateral toes margined externally, with small prominent scales directed outwards. The interdigital webs are nearly straight anteriorly and crenulate. The claws are of moderate length, well curved, much compressed, very acute, that of the third toe with a sharp, little expanded, inner edge.

The plumage is close, elastic, soft but rather firm, blended, but on the back and wings compact ; the feathers ovato-elliptical, rounded ; those on the upper hind part and sides of the neck with their terminal filaments stiff and rather silky. Wings very long, rather broad, pointed, with thirty quills ; the primaries rather broad, tapering to an obtuse point, the first longest, the second a third of an inch shorter, the rest rapidly graduated ; the outer secondaries incurved, obliquely rounded, the inner web extending beyond the outer ; the inner secondaries elongated, broad, and pointed. The tail-feathers are of moderate length, abruptly rounded, repand on the inner web at the end ; the lateral a quarter of an inch shorter than those next the middle feathers, which extend three inches and a quarter beyond them, and are of moderate breadth, taper gradually from the base, but more rapidly toward the point, which is attenuated.

The bill is greyish-black, with a tinge of blue, the base of the lower mandible slightly tinged with flesh-colour. Iris hazel. Feet and claws black. The upper part of the head is blackish-brown ; the hind part and lower sides of the neck greyish-brown ; the back, wings, and tail blackish-brown ; the quills and tail-feathers darker, toward the base pale, the primaries, with a portion of the base, more extended on the inner web, white ; their shafts white until near the end ; the secondaries and tail-feathers with the terminal dark part of the shafts more extended. Part of the forehead, the cheeks beyond the eyes, and the sides and upper hind part of the neck white, tinged with pale yellow, the terminal compact filaments being of that colour. The lower parts are white, the neck anteriorly tinged with greyish-brown ; the axillars and lower wing-coverts dark greyish-brown, the abdomen tinged with the same colour, which deepens on the lower tail-coverts.

Length to end of tail 21 inches; extent of wings 42; wing from flexure 13; tail to the tip $8\frac{3}{4}$, the middle feathers $3\frac{1}{4}$ longer than the rest; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{3}{4}$; tarsus $1\frac{8}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{5}{12}$, its claw $\frac{5}{12}$; fourth toe $1\frac{1}{4}$, its claw $\frac{3}{12}$.

FEMALE IN SUMMER.—Similar to the male, with more brown on the lower parts.

Length to end of tail 19 inches; extent of wings 40; wing from flexure $12\frac{3}{4}$; tail $8\frac{1}{4}$; bill along the ridge $1\frac{1}{2}$; tarsus $1\frac{8}{12}$; middle toe $1\frac{4}{12}$, its claw $\frac{4}{12}$.

VARIATIONS.—In old birds the variations are not remarkable, the tint of the upper parts being only darker or lighter, and the white of the lower more or less diminished in extent by greyish-brown. But great differences are observed in younger birds, as will be afterwards explained. Toward the end of summer the colour of the upper parts becomes much faded. The quills and tail-feathers are renewed by the end of August, and are then glossy, and almost black toward the end; the smaller feathers are not all renewed until much later.

HABITS.—In autumn, when the fry of the coalfish swarm along the shores, and shoals of the sand-eel sport in the waters, vast numbers of Gulls, Sea-Mews, and Terns frequent the sandy coasts. Here, on this beach, on the southern side of the Firth of Forth, let us seat ourselves, for a short while, and take note of occurrences. Not having the organs of time or number in trim, I can only write “the end of August, 1831. The wavelets chase each other in undulating lines, the sunbeams glitter on the smooth surface of the sea, and the gentle breeze tempers the heat of noontide. The sea-birds are on wing, wheeling and hovering all around, vociferous in their enjoyment, their screams mingling into one harsh noise, not less pleasing for a time than the song of the Lark or Blackbird. Every now and then a Tern dips into the water, and emerges with a little fish in its bill,

which it swallows without alighting. In the midst of all this bustle and merriment, there comes gliding from afar, with swift and steady motion, a dark and resolute-looking bird, which, as it cleaves a path for itself among the white Terns, seems a messenger of death. But a few minutes ago he was but a dim speck on the horizon, or at least some miles away; and now, unthought of, he is in the very midst of them. Nay, he has singled out his victim, and is pursuing it. The latter, light and agile, attempts to evade the aggressor. It mounts, descends, sweeps aside, glides off in a curve, turns, doubles, and shoots away, screaming incessantly the while. The Sea-Hawk follows the frightened bird in all its motions, which its superior agility enables it to do with apparent ease. At length the Tern, finding escape hopeless, and perhaps terrified by the imminence of its danger, disgorges part of the contents of its gullet, probably with the view of lightening itself. The pursuer, with all his seeming ferocity, had no designs upon the life of the poor Tern; and now his object is evident, for he plunges after the falling fish, catches it in its descent, and presently flies off to attack another bird. In this way the marauder makes his rounds, exacting tribute from all whom he thinks capable of paying it, and not sturdy enough to resist oppression. The Tern, the Brown-hooded Mew, and the Kittiwake he harasses; but the Black-backed, Yellow-footed, and Herring Gulls are not his tributaries. They pay no taxes to governors, nor black-mail to protectors. The Teaser never fishes for himself on such occasions, although his organization seems to fit him for aquatic rapine, even more than that of the Tern or Gull. He is lord of the shores, and they who fish by them must yield up a portion of the produce of their industry. When satisfied with food, he retires to the distant bosom of the deep, or to some islet or unfrequented part of the sand; but his awakening appetite soon forces him to return, and for hours together he may be seen on wing, singling out a bird here and there and pursuing it, or gliding swiftly, as if on urgent business, from one group to another.

“The Pirate sweeps rapidly along on extended wings, which are considerably curved, like those of the Gulls and

Terms, the latter of which it resembles in its mode of flight, although it moves more directly, with scarcely perceptible undulations. There it passes. Let them who choose describe its flight partly from recollection and partly from fancy, we take notes from nature. At times it may be observed flying about at some height, in short curves, in the manner of a Hawk. It is then not inspecting the deep below, nor stealing upon its prey, nor pretending to be doing nothing, for the purpose of catching the unwary, but, like an idle gentleman or useless half-pay captain, merely taking a turn till dinner-time. When approaching a bird at full speed, it flies directly forward, with frequent flaps; and when in pursuit, it turns, ascends, falls, and glides, with the most elegant and easy motions. When its object has been attained, it flies off with a less rapid, but steady flight, to renew its attacks. But, as there is nothing more to be seen here, we may stroll along; and, in the meantime, I may give the rest of the Pirate's history.

“These birds are rather numerous in autumn along the shores of the Firths of Forth and Tay. Along our eastern shores they are met with here and there. In the Firths of Beaully and Cromarty they are at least as frequent as in those of the south of Scotland. On the Solway and in the Clyde they are also seen. But in winter they are all gone; and in summer the places in which they are to be met with are the Orkney and Shetland Islands on one side, the Outer Hebrides and some of the Inner on the other. During the whole of the warm season they are there not uncommon, and are as often seen in the sounds and channels as along the sandy shores. But the places in which they are to be met with in the greatest abundance are on the heaths at a distance from the sea, to which, however, they still resort, as the distance of three or four miles is to them less than that of three or four hundred paces is to us, or at least to many people. But the history of its nidification, eggging, hatching, and nursing will best form the end of the story.

“The Pirate can neither dive nor plunge, but it swims with ease, and sits lightly on the water, like a Gull. The

instinct that enables it to select a bird that has something to spare for its wants is truly surprising. I have never seen it give chase to a Gull or Tern, without accomplishing its purpose. One might be induced to think that it watches the birds, and, on observing that one has caught a fish, attacks it before its food has been well swallowed; but I have seen it come from a distance into the midst of a flock, and select one which it could not previously have noticed. It seldom fails in catching the fish that has been dropped, but yet this sometimes happens; and on such occasions I have seen it pick it up after it had fallen on the water, although at other times it did not attempt to obtain it, possibly because it had sunk beyond its reach.

“It is not a singular case that an animal should be destined to live by the labours of others of different species; but in the class to which the Pirate belongs there are very few instances of such an arrangement. It cannot, however, be said to live without labour, for the trouble of compelling its unwilling vassals to disgorge is apparently greater than what would abundantly supply it with honestly obtained food. We are accustomed to look upon rapine and destruction in animals with a feeling akin to that excited by the same actions in our own species; but in this we manifestly err, the Pirate being quite as innocently occupied as the bird which it pursues.

“One might naturally suppose that this rover of the seas should breed on its shores, on cliffs, or unfrequented islands, and this had been my opinion until, one day, the 17th June, 1818, when traversing the marshy heaths of North Uist, I was met by two individuals of this species, which seemed intent on decoying me from some lumps of peat covered with heather that emerged from a small pool. My gun was in bad condition, and covered with rust, which in these islands grows almost as fast as mushrooms. So I sat down, put it in order, and, one of the birds coming very near me, I fired, and brought it down. Several now appeared, which had been sitting in the neighbourhood. Having wounded another which flew directly off, I pursued it more than a mile before an opportunity of shooting it occurred. This bird, although

it lost its life, saved the colony from pillage ; for, as I had to walk to Kyles that evening, I had no time to return. They breed in considerable numbers on these heaths of Uist, as well as in the Island of Scalpay in Harris, and in several parts of Lewis, yet I have never met with its nest."

Mr. Dunn informs us that " numbers breed in Orkney and Shetland, appearing regularly in May, and leaving in August. It is confined to a few situations, and is strictly preserved, from the same motive as the Skua Gull. The place where I found it most numerous in the former country was the Holm of Eddy, and in the latter on the Island of Noss, near Lerwick. It constructs its nest on low wet mossy heaths in exposed situations. The female lays two eggs, and has recourse to the same stratagem that the Plover employs to decoy you from the nest ; but when a person approaches near to the place where the nest is built, becomes bold and fierce, and strikes severely with the feet and bill. A dog I had with me on my first visit had been so repeatedly and severely struck by this bird, that had he heard one cry, the sound of which from experience he was perfectly familiar with, he would instantly come behind me for protection, and all my efforts to make him hunt again were ineffectual until we had got some distance from the place. Another dog I had with me on my second visit possessing more courage than the former, after feeling the effects of their bills once or twice, and appearing much astonished at such a foe, would watch the bird pouncing at him and spring from the ground to meet the attack, and by this means he escaped many severe blows."

The eggs differ greatly in size, form, and colours. The largest in my collection are two inches and four-and-a-half-twelfths in length, an inch and seven-twelfths in breadth, the smallest is two inches and two-twelfths by an inch and five-twelfths. Generally they are ovato-pyriform, sometimes ovato-oblong, more rarely broadly ovate, like those of a Gull or Mew. The ground-colour is brownish-green, olivaceous, umber-brown, light yellowish-brown, pale yellowish-grey, or light greyish-green ; spotted and patched with umber or blackish-brown and purplish-grey. Even the young, which

are at first covered with long soft grey down, vary in the colours of their plumage.

On this subject we may again refer to Mr. Dunn, an honest and experienced observer:—"There is a great variety in the plumage of this bird, which in my belief does not depend upon either age or sex. In fact, in several pairs which I procured, it was impossible to tell from outward appearance the sex to which each belonged; and that this difference does not depend upon age, is proved by the circumstance of my having frequently taken the full-fledged young birds of a dark-brown colour, the parents of which were light-breasted, and, on the contrary light-coloured young birds from dark-coloured parents. The light-coloured birds, however, are not so numerous as the dark ones. Difference of colour appears to have no effect in their associating together in the breeding season; they mix indiscriminately. I have seen instances of two of these birds pairing together, the one dark brown, the other much lighter, with a white breast; two both light brown; and again two both dark-brown."

Dr. Edmondston has favoured me with the following notes, which coincide with Mr. Dunn's remarks:—"Of all birds I know this has the most rapid flight. It is a very bold, familiar, and elegant bird. Its voice is similar to that of the Hawk. It breeds on the heaths and produces two young, of a brownish speckled colour, which were formerly decribed as a distinct species under the name of *Larus crepidatus*. The general colour is like that of a young Kestrel, to which in habits and manners they are strikingly similar; others are hardly at all speckled, but, nearly like the adult, black; and this occurs in the same nest, and is not dependent on sex, but occurs indifferently, so far as I can discover, whether the parent birds be two white-breasted, two black, or one of each. It is difficult to rear after two or three months old; I suspect because its organs of digestion are naturally capable of acting with effect only on what had previously been subjected to the gastric juice of other birds. This is a curious fact in the history of this species. It seems as dependent, especially on the Kittiwake and Tern, for food, as the Cuckoo is on the Hedge Sparrow and other birds for incubation, and it accord-

ingly most strictly accompanies them in their periodical migrations. The proximate and final causes of this peculiarity it is difficult to divine."

It has been a general opinion among the learned that this bird feeds on the dung of Gulls and Terns, whence the name *Stercorarius*, which they gave it; the same opinion prevails among the unlearned at the present day, as well as among some of the educated, whence our vernacular names of Dung Bird and Dirlen Allen; but the truth is, as I have satisfied myself by observation, as have many others before me, that it never seizes the mutings, its object being to obtain the undigested food of other birds.

The history of this species is pretty well known, and somewhat fully detailed above; but the diversity of colour, which seems analogous to that observed in the Buzzards, still requires elucidation. M. Graba having stated that of fifteen individuals killed on their nests, eight white-breasted birds were found to be males, and six brown birds females, assumes it as proved, or at least very probable, that the adult male is white-breasted, and the adult female brown. But others, Dr. Edmondston and Mr. Dunn, for example, have shot white-breasted females, and are well assured that birds of both sexes may be white-breasted, and of both brown-breasted. Analogy would lead to the belief, or probability, that the old birds of both sexes are white-breasted, the middle-aged or adolescent brown.

YOUNG.—A young bird with its plumage not quite developed, has the bill flesh-coloured for more than half its length, dusky at the end; the tarsus yellowish-grey; the toes and webs flesh-coloured, toward the end black; the claws brownish-black. The upper part of the head and the hind-neck are pale brownish-yellow, streaked with dusky. The cheeks, throat, and fore neck of a paler tint, more broadly streaked with dusky. The upper parts greyish-black, interruptedly banded with light brownish-red, that colour terminally edging each feather. Quills and tail-feathers deep black, all more or less tipped with light-red, the shafts of several of the primaries white. Lower parts dull greyish-yellow, confusedly

undulated with dusky ; the middle of the abdomen less barred and nearly white ; the lower tail-coverts broadly barred with dusky and tipped with yellowish-red ; lower wing-coverts barred and streaked with white and blackish-brown. Concealed parts of the upper plumage pale grey, of the lower white.

LESTRIS PARASITICA. PARASITIC SKUA.

Larus parasiticus. Linn. Syst. Nat. Ed. 10.

Stercorarius longicaudatus. Brisson, Ornithologie, VI. 155.

Stercoraire parasite. *Lestris parasitica.* Temm. Man. d'Ornith IV. 501.

Lestris parasiticus. Jenyns. Brit. Vert. Anim. 283.

Lestris parasitica. Bonap. Comp. List, 63.

Bill an inch and a twelfth in length ; tarsus an inch and a half ; middle tail-feathers six or eight inches longer than the rest, tapering to a fine point. Male in summer with the upper part of the head brownish-black ; the neck yellowish-white, its lower hind part and all the upper parts blackish-grey, the quills darker, the primaries with the shafts white ; lower parts white ; lower tail-coverts and under side of wings dark greyish-brown.

ADULT IN SUMMER.—This species, which, although alleged to be *Larus parasiticus* of Linnæus, has been in a great measure overlooked since his time, and only within these twenty years distinguished from the last, is very similar to it in form and colouring, but of smaller size, and yet of greater length, the middle tail-feathers greatly exceeding those of the other species. The body is rather slender ; the neck of moderate length ; the head oblong, rather small. Bill about the length of the head, nearly as broad as high at the base, rather slender, straight, with the tip decurved. Upper mandible with the dorsal line straight to the end of the cere, the ridge broad and convex, with a narrow groove on each side, the nasal space covered by a thin plate, the branches narrow and convex, the edges sharp and inflected, the tip compressed, convex on the sides, curved over the lower, thin-edged, but obtuse. Lower mandible with the inter-

crural space very long and narrow, the branches convex, their lower outline slightly concave, a slight prominence at their junction; the dorsal line very short, ascending, slightly concave, the edges sharp and somewhat inflected; the tip narrow, sharp-edged, rather obtuse; the gape-line nearly straight until toward the end, when it becomes decurved.

Nostrils linear-oblong, wide anteriorly, nearer the tip than the base, sub-marginal, pervious. Feet rather short, rather slender; tibia bare for about eight-twelfths of an inch; tarsus compressed, anteriorly covered with broad decurved scutella, laterally with oblong scales, posteriorly with smaller oblong, prominent scales. Hind toe extremely small, elevated, covered with small scales, its claw small, arcuate, acute; anterior toes of moderate length, well curved, much compressed, very acute, that of the third toe with a sharp little expanded inner edge.

The plumage is close, elastic, soft but rather firm, blended, on the back and wings compact; those on the upper hind part and sides of the neck with their terminal filaments stiffish and somewhat silky. Wings very long, rather broad, pointed, with thirty quills; the primaries tapering to an obtuse point, the first longest; outer secondaries obliquely rounded, incurved, their inner web extending beyond the outer; inner secondaries elongated, broad, and pointed. Tail-feathers of moderate length and abruptly rounded, except the two medial, which taper gradually to a narrow point, and exceed the rest by eight inches.

The bill is greyish-black, tinged with blue above, the base of the lower mandible slightly flesh-coloured. Feet and claws black. The upper part of the head, and the space between the bill and the eye, brownish-black; the cheeks and sides of the neck yellowish-white; lower hind-neck, back, and wings blackish-grey; quills and tail-feathers deep brownish-black, the former with the shafts white; upper part of neck all round and lower parts of the body white; the sides and lower tail-coverts greyish-brown.

Length to end of tail 25 inches; wing from flexure $12\frac{1}{4}$; tail 11; bill along the ridge $1\frac{2}{3}$, along the edge of lower mandible $1\frac{8}{12}$; tarsus $1\frac{9}{12}$; middle toe $1\frac{3}{12}$, its claw $\frac{4}{12}$.

VARIATIONS.—Individuals apparently adult have the lower parts brownish-grey. These are considered by some to be younger birds.

HABITS.—It is said to inhabit the arctic regions generally, the coasts of Norway, and the east coast of North America, as far south as the Gulf of Mexico. Very few individuals have been obtained in Britain. One in the British Museum is mentioned ; the skin of another, procured in Orkney, was sent to the Zoological Society of London, in 1832 ; one was shot in October, 1837, near Whitburn, in Durham ; and “ young birds have been killed in the vicinity of the Tyne, and on the coast of Durham, in the month of September.” I have not met with it alive, or, at least, did not distinguish it from the other species. Very little is known of its habits, which, however, in so far as they have been described, resemble those of Richardson’s Jager. In Mr. Thompson’s Natural History of Ireland, which contains a vast amount of ornithal statistics, sporting information, and various other matters, but ordinarily no descriptions or even specific characters of the species, nor even continuous accounts of their habits, this species is stated to be “ of occasional occurrence in autumn on some parts of the coast.”

YOUNG.—“ The young of the year are blackish-brown, each feather of the back being bordered with yellowish, more or less tinged with brown ; belly streaked with dull white on a brown ground ; lower tail-coverts streaked with brown and ochre-coloured bands ; wings and tail blackish-brown, without spots ; base of the bill ochre-coloured ; tarsus, hind toe with its claw, and the base of the membranes dull yellowish ; the feathers of the tail rounded ; the middle pair not projecting.”—Temminck.

CETOSPARACTES. WHALE-GULL.

MOST authors have considered the only known species of this genus as in no way remarkable among other Gulls, unless on account of its white plumage; several, however, have taken notice of its comparatively stout bill, very short rough tarsi, and crenated interdigital membranes; while a few hold it to be entitled to generic distinction. With these latter I agree, although differing from them in their application to this new genus of the name *Gavia*, which having been by Brisson bestowed upon the smaller Gulls, ought, I think, to be left with them. The name which I have chosen for it, *Cetosparactes*, compounded of *Κῆτος*, whale, and *Σπαράκτης*, tearer, is suggested by its well-known habit of attending on the whale ships, and greedily devouring blubber and other animal matter.

Bill short, robust, compressed, straight; upper mandible with the dorsal line somewhat concave at first, then arcuato-declinate, the ridge broadly convex, narrowed but convex beyond the nostrils, the lateral sinus rather short, wide and feathered, the nostrils medio-basal, linear-oblong, wider anteriorly, covered above and behind with a sloping thin-edged plate, the branches convex, the sides beyond the nostrils sloping and convex, the edges thin, direct, the tip obtuse, very slightly prolonged; lower mandible narrower, compressed, with the intercrural space rather long and narrow, the crura slightly inclined outwards, and a little convex, their lower outline straight, forming a very slight prominence at the commissure, the dorsal line ascending and almost straight, the edges thin and somewhat inflected, the tip narrow, rather obtuse; the gape-line commencing beneath the eyes, nearly straight until beyond the nostrils, when it becomes arcuato-declinate.

Head rather large, ovato-oblong, anteriorly narrowed. Eyes rather small; eyelids feathered, with bare crenulate margins. Aperture of ear of moderate size, roundish. Neck stout, and of moderate length; body rather full. Legs very short; tibia bare to a small extent; tarsus very short, little compressed, covered anteriorly with nearly straight scutella, laterally and behind with very small prominent scales. Hind toe very small, little elevated, with a stout decurved claw; fore toes short, though long in comparison with the tarsus, the outer little shorter than the third, all with numerous scutella, flattened and prominently papillate beneath; the lateral thickly margined. Claws of moderate length, strong, well-curved, moderately compressed, rather acute, that of the middle toe with a broadly-expanded thin inner edge. Interdigital membranes emarginate, strongly crenulate, the outer with a sinus.

Plumage very full, close, elastic, soft, and blended; on the back and wings compact. Wings very long, rather broad, pointed, with thirty quills; primaries broad, the outer two with a sinus on the inner web near the obtuse tip, the first longest; secondaries rounded. Tail of moderate length, a little rounded, of twelve broad rounded feathers.

The only species as yet known inhabits the arctic seas, lives on fish and the flesh of dead cetacea, breeds on high cliffs, and in autumn advances southward, but only as far as the northern borders of the temperate regions. This genus may be considered as forming the transition from *Larus* to *Procellaria*, as well as to *Lestris*. The young are dappled with black and white, like *Daption capensis*, the adult unspotted white.

CETOSPARACTES EBURNEUS. THE IVORY WHALE-GULL.

IVORY GULL. WHITE GULL. SENATOR. SNOW-BIRD.



FIG. 92.

Larus eburneus. Gmel. Syst. Nat. I. 596.

Larus eburneus. Lath. Ind. Ornith. II. 816.

Moriette blanche ou Sénateur. *Larus eburneus.* Temm. Man. d'Ornith.
II. 769; III. 474.

Ivory Gull. *Larus eburneus.* Selb. Illustr. II. 497.

Larus eburneus. Ivory Gull. Jen. Brit. Vert. An. 276.

Gavia eburnea. Bonap. Comp. List.

Bill short, stout, an inch and a third in length, half an inch high at the knob ; tarsus very short, rough, an inch and a half long ; tail a little rounded ; interdigital membranes emarginate, strongly crenulate, the outer with an abrupt sinus. Adult with the bill greenish-grey, yellow, tinged with red, beyond the nostrils ; feet black ; plumage white, slightly tinged

with yellow. Young with the bill dusky, pale yellow at the end ; feet black ; plumage white, variegated with brownish-black, each feather having a large round spot toward the end ; forehead and loreal spaces bluish-grey.

MALE IN SUMMER.—The “Ivory Gull,” so named on account of the peculiar white colour of its plumage, having occurred in Britain only in a very few instances, and these in the winter season, I am obliged to take its description in summer plumage from a specimen in my collection, procured in Davis’ Straits.

This bird is apparently of a rather robust form, with the neck strong, and of moderate length, the head rather large, ovato-oblong, anteriorly narrowed. The bill is short, robust, compressed in a less degree than in most species of this family, nearly straight ; the upper mandible with the dorsal line nearly straight, being very slightly concave for half its length, then moderately decurved, the ridge convex, the sides considerably so, the edges sharp, and toward the end slightly arched, the tip rather obtuse ; the lower mandible with the angle rather long and narrow, the prominence small, the dorsal line ascending, and slightly concave, the sides nearly flat, the edges sharp and somewhat inflected, the tip narrow, but obtuse.

The nostrils, which are linear, but a little wider anteriorly, are five and a half twelfths in length. The eyes rather small, four-twelfths across. The feet are very short, but pretty stout ; the tibia bare for only a quarter of an inch ; the tarsus very short, moderately compressed, with about twenty scutella, of which the upper are extremely narrow, the scales on the hind part small and prominent. The hind toe is very small, with a single scutellum besides scales ; the second or inner toe short, with fourteen scutella, the upper very small ; the third a little longer than the fourth, with twenty-eight ; the fourth, much longer than the second, with about twenty scutella. The soles are flattened and rough, the margin thick and prominent, the membranes with a denticulate incurved margin, that of the outer sinuous, with a sinus and prominence. The skin of the whole foot is remarkably thick

and rough, as in the Petrels. The claws are moderately long, stout, arched, rather acute.

The plumage in general is full, close, elastic, very soft, and blended; on the back and wings compact; the feathers are elliptical, incurved; the down copious. The quills and tail-feathers have a slight silky gloss, more conspicuous on their lower surface. The wings are very long, extending about an inch beyond the tail, rather broad, acute; the outer primaries broad and tapering, the first longest, the second two-twelfths of an inch shorter, both with a slight sinus on their inner web near the end, the rest rapidly decreasing, the secondaries twenty, broad, and rounded, the inner narrower, but rounded. The tail is of moderate length, the outer feathers a quarter of an inch shorter.

The bill is greenish-grey as far as the anterior extremity of the nostrils, then of a rich yellow, tinged with red, the edges horn-colour. The margins of the eyelids vermilion, "the iris brown." The feet and claws are black. The plumage is entirely white, with a slight yellowish tinge; so that the name *eburneus* is more correct than *candidus*.

Length to end of tail 20 inches; extent of wing about 42; wing from flexure $14\frac{1}{4}$; tail $6\frac{1}{4}$; bill along the ridge $1\frac{5}{12}$; along the edge of lower mandible $2\frac{1}{4}$; tarsus $1\frac{6}{12}$; hind toe $\frac{2}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; third toe $1\frac{4}{12}$, its claw $\frac{5}{12}$; fourth toe $1\frac{4}{12}$, its claw $\frac{4}{12}$.

FEMALE IN SUMMER.—In all respects similar to the male, but somewhat smaller.

Length to end of tail 18 inches; wing from flexure $13\frac{1}{2}$; tail 6; bill along the ridge $1\frac{4}{12}$; tarsus $1\frac{1}{2}$; middle toe $1\frac{2}{12}$, its claw $\frac{5}{12}$.

VARIATIONS.—Considerable differences as to size are observed, but otherwise all the adult individuals that I have seen are similar.

HABITS.—This bird inhabits the arctic regions of both continents, and in particular the coasts of Spitzbergen and Greenland, on the cliffs of which it breeds. According to

Captain Sabine it is abundant in Baffin's Bay, and Dr. Richardson states that it was found breeding in great numbers on the high perforated cliffs forming the extremity of Cape Parry, in latitude 70°. As I have had no opportunity of visiting its haunts, or even of seeing it alive in a single instance, I can only add, that, according to the accounts of authors, it is less shy than Gulls generally are, being nearly as fearless as the Fulmar, with which it associates while feeding on dead whales; has a strong and harsh voice; and, unless when engaged in breeding, is usually met with on the open sea. Mr. Audubon says he has ascertained that it visits the southern coasts of Labrador and Newfoundland every winter. A very few instances of its visiting Britain have been recorded. The first of these came under the observation of Dr. Edmondston, who, in the fourth volume of the Memoirs of the Wernerian Society, has described a young individual, shot in Balta Sound, Shetland, on the 13th December, 1822. Mr. Selby states that "it has been killed, also in an immature state, in the Firth of Clyde." Two others are mentioned as having been obtained on the coasts of Durham and Yorkshire, two at Brighton, one at St. Leonards, and the eighth at Rye. It "has very rarely been observed" in Ireland. Instances are mentioned by Mr. Thompson.

YOUNG.—According to M. Temminck "the young are marked and spotted with blackish-brown, much in the same manner as the Dappled Petrel, but the spots are more distant from each other; the quills marked toward the end with a black spot; a black band on the tail. The bill leaden, with the extreme tip yellowish. These black spots still occur in some adult individuals, probably two or three years of age, but they are then small; each quill and all the tail-feathers have them at little distances from the end; the whole plumage is spotted with black on a white ground.

The individual obtained by Dr. Edmondston was sixteen inches in length, and thirty-nine and a half in extent of wing. The sides were of a pale lead colour; the bill bluish-black at the base, gradually becoming paler toward the point; the feet and claws black; the plumage of a delicate glossy

ivory-white, with brownish-black circular spots dispersed through it, sparingly distributed on the back and lower parts, most numerous on the wing-coverts and scapulars; the tail and primaries tipped with the same colour; the throat similarly mottled, but the dusky spots of a paler shade and confluent; the forehead and loreal spaces lead-colour.

REMARKS.—This species has the tarsi much shorter, less compressed, and more scabrous, than those of any other of its family. The bill is stronger and less compressed than that of the smaller British Gulls. In these respects, as well as in its general form and habits, it approaches in some degree to the Fulmar-Petrels. This affinity is further indicated by the colouring of the young. The Kittiwake, although its bill is more slender, is, I think, more nearly allied to the Ivory Gull than to any other British species.

RISSA. KITTIWAKE.

SEVERAL authors, who have considered all the Gulls, popularly so called, as forming a single genus, have placed the Ivory Gull and the Kittiwake in mutual proximity, they having been aware of an affinity indicated by a similarity in the form of the bill, the shortness of the feet, and some of the habits of these birds. Most writers, however, have merely assigned them a station determined by their size, separating them by our "Common Gull." Some again have formed the Kittiwake into a genus by itself, of which the principal character in their estimation is the extremely diminutive size of the hind toe. Now, although in my opinion this character is of very little importance, I think that the bird in question differs from every other of its family sufficiently to entitle it to generic distinction.

Bill rather short, moderately stout, compressed, nearly straight; upper mandible with the dorsal line very slightly convex at first, then arcuato-declinate, the ridge convex, gradually narrowed, the lateral sinus rather short, wide, and feathered, the nostrils submedial, linear-oblong, wider anteriorly, covered above and behind with a sloping, convex, thin-edged plate, the branches convex, the sides beyond the nostrils nearly erect, and flattened, the edges thin, direct, the tip narrow, rather acute, very slightly prolonged; lower mandible narrower, compressed, with the intercrural space long and narrow, the crura erect, convex, their lower outline slightly concave, forming a slight prominence at the commissure, the dorsal line distinctly concave and scarcely ascending, the edges thin and inflected, the tip compressed and rather acute; the gape-line commencing beneath the eyes, nearly straight until beyond the nostrils, when it becomes gently arcuato-declinate.

Head rather large, ovato-oblong, anteriorly compressed. Eyes rather small; eyelids feathered, with bare crenulate margins. Aperture of ear of moderate size, roundish. Neck stout and of moderate length; body moderately full. Legs very short; tibia bare to a moderate extent; tarsus very short, considerably compressed, covered anteriorly with decurved scutella, laterally and behind with small, nearly flat scales. Hind toe extremely diminutive, with a minute claw, obsolete in old individuals; fore toes of moderate length, the shortest as long as the tarsus, the outer little shorter than the third, all with numerous scutella, flattened beneath, the lateral moderately margined. Claws rather small, compressed, broadly grooved on the sides, moderately arched, rather acute, that of the middle toe with the inner margin expanded. Interdigital membranes slightly emarginate, continuous.

Plumage full, close, elastic, soft, and blended; on the back and wings somewhat compact. Wings very long, rather narrow, pointed, with twenty-eight quills; primaries rather narrow, tapering to an obtuse point; secondaries narrowly rounded, the outer incurvate. Tail of moderate length, even, of twelve abruptly-rounded feathers, of moderate breadth.

The only species known is dispersed in summer over the arctic and colder temperate regions, and advances southward in winter into the warmer temperate climates. It lives on small fishes, crustacea, and mollusca, and is less suspicious of danger from man than most species of this family. This genus exhibits some affinity to the Procellariæ. In its own group it seems to intervene between *Cetosparactes* and *Larus*. As in the first of these genera, the young are spotted with black, but only on the back and wings.

RISSA TRIDACTYLA. THE BLACK-FOOTED KITTIWAKE.

KITTIWAKE. ANNET. TARROCK.

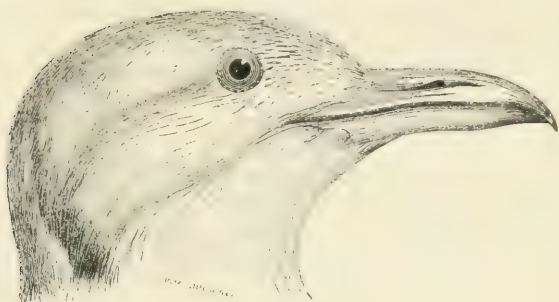


FIG. 93.

- Larus Rissa. Linn. Syst. Nat. I. 224. Adult.
 Larus tridactylus. Linn. Syst. Nat. I. 224. Young.
 Larus tridactylus. Lath. Ind. Ornith. II. 817.
 Kittiwake. Mont. Ornith. Dict. and Suppl.
 Mouette tridactyle. Larus tridactylus. Temm. Man. d'Ornith. II. 274.
 Kittiwake. Larus Rissa. Selby, Illustr. II. 403.
 Larus Rissa. Kittiwake. Jenyns, Brit. Vert. Anim.
 Rissa tridactyla. Bonap. Comp. List, 62.

Bill shortish, rather stout, about an inch and a half in length, five-twelfths high at the knob; tarsus an inch and a quarter long; tail even, interdigital membranes with a concave continuous margin. Adult in winter with the bill pale greenish-yellow; feet black; back and wings light bluish-grey; tips of five outer primaries, and outer web of first, black; the rest of the plumage pure white, except the hind part of the neck and the occiput, which are pale bluish-grey. Adult in summer with the head and neck pure white, the other parts as in winter. Young with the bill black, the feet greenish-grey; the

forehead and lower parts white, a narrow black crescent before the eyes, a dark grey patch over the ears, the occiput tinged with grey, a dusky patch on the nape; the back deep greyish-blue; the feathers margining the wing, and those along the humerus black, the middle coverts brown; the scapulars and secondaries with a black patch; the five outer primaries black, unless toward the inner margin; the tail white, with a broad black band, decreasing outwards, and not extending to the outer web of the outer feather.

As the Kittiwake is not often seen with us during the cold season, and at the time of its return in spring very seldom retains its winter plumage, I shall first describe it in that of summer.

MALE IN SUMMER.—This beautiful bird has the body moderately full, the neck of ordinary length, the head rather large, ovato-oblong, anteriorly compressed. The bill is much shorter than the head, rather stout, nearly straight, a little decurved at the end, and rather acute; the upper mandible with the dorsal line gently decurved beyond the nostrils, which are linear-oblong, four-twelfths of an inch in length, the ridge broadly convex at the base, the sides toward the end nearly erect and flattened; the lower mandible with the lower outline of the crura nearly straight, the angle slightly prominent, the dorsal line concave, and the tip nearly on a level with the knob.

The eyes are rather small, their aperture nearly four-twelfths. The legs are very short and rather strong; the bare part of the tibia about half an inch long; the tarsus very short, with sixteen decurved scutella; the first toe so small, although regularly formed, as merely to present the appearance of a slender knob; its claw decurved, obtuse, not readily perceptible, and in old birds obsolete; the fore toes rather long and slender, the inner with twenty-two, the middle with thirty, the outer with twenty-eight scutella. The anterior toes are rather small, compressed, moderately arched, rather acute, that of the middle toe with the inner edge expanded.

The plumage is full, close, elastic, and blended; but on the back and wings somewhat compact. The lower surface of the quills and tail-feathers with silky lustre. The wings are very long, extending an inch and a half beyond the tail, rather narrow, acute, with twenty-eight quills; the first longest, the second slightly shorter, the other primaries rapidly graduated; the outer secondaries obliquely rounded, the inner elongated. The tail is even, and of moderate length.

The bill is pale greenish-yellow; the angles of the mouth and the edges of the eyelids bright orpiment, inclining to scarlet; iris hazel; feet brownish-black, with a green tinge; claws bluish-black. The head, neck, all the lower parts, a portion of the back anteriorly, the upper tail-coverts, and the tail, are pure white; the back, scapulars, and upper surface of the wings, including their edges, are light bluish-grey, of which there is a slight tinge on the marginal lower wing-coverts. The outer web of the first quill, unless just at the base, and its inner web, for two inches and a half at the end, are deep glossy black; the ends of the next four quills are of the same colour, diminishing in extent; the fourth and fifth with a small white space at the tip. There is a little white on the tips of the other primaries, and the secondaries are largely tipped with the same, the inner excepted.

Length to end of tail 17 inches; extent of wings 36; wing from flexure $12\frac{1}{2}$; tail 5; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $2\frac{2}{12}$; tarsus $1\frac{1}{4}$; first toe $\frac{1}{12}$, its claw $\frac{1}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{7}{12}$, its claw $\frac{6}{12}$; fourth toe $1\frac{5}{12}$, its claw $\frac{3}{12}$.

FEMALE.—The female is similar to the male, but somewhat less.

Length $16\frac{1}{2}$ inches; extent of wings 35; bill along the ridge $1\frac{1}{2}$; tarsus $1\frac{1}{4}$; middle toe and claw 2.

The above descriptions are from individuals killed on the Firth of Forth, in May 1824, compared with others.

VARIATIONS.—In size this species varies little, the greatest length being $17\frac{1}{2}$, the least 16 inches, and the extended

wings measuring from 34 to 37. The bill, however, varies considerably in length and thickness. In one specimen before me it is only an inch and a quarter along the ridge, while in another it is an inch and seven-twelfths; in the former nearly half an inch high at the knob, in the latter four-twelfths and a half. The hind toe in young birds has two distinct scutella, and an obvious decurved claw, whereas in very old birds the scutella are converted into thick scales, and the claw is straight, much smaller, or almost entirely obliterated. This fact, curious as it is, occurs also in the Sea Mews. Sometimes the sixth quill is marked with black, and sometimes only four quills are so marked. The tint of the feet varies from greenish-brown to greenish-black, and that of the bill differs considerably. The bluish-grey of the back and wings becomes paler as the season advances, and the deep black markings on the outer quills change to brown. In the beginning of summer, I have seen the breast with a beautiful full pale purplish-blue tinge.

HABITS.—The Kittiwakes arrive along our coasts in the end of March, and disappear in October. It has been asserted by some and conjectured by others, that they remain with us during the winter, if not in the bays and estuaries, yet on the open sea or somewhere; but I find no evidence in support of this doctrine, although individuals are met with at that season, in the estuaries of Scotland, and along the southern coast of England. They betake themselves to high maritime cliffs, selecting those most inaccessible, and generally such as are frequented by Auks, Guillemots, and other sea-birds. To these favourite resorts they return year after year; nor am I aware that with us new stations are ever occupied, or colonies formed. In Scotland their principal breeding-places are St. Kilda, Berneray of Barra, the Shiant Isles on the east side of Lewis, the Flannan Isles on the west side, some of the Shetland Islands, the Bullers of Buchan near Peterhead, Fowlsheugh near Stonehaven, the Red Rock near Montrose, the Isle of May and the Bass Rock in the mouth of the Firth of Forth, and St. Abb's Head to the southward of it. England, however, is less plen-

tifully supplied with Kittiwakes, the Fern Islands and Flamborough Head being, I believe, the only breeding-places there. On the coasts of Ireland it breeds in great numbers in many localities.

They generally select the lower parts of the cliffs, from almost the edge of the water to the height of about a hundred feet, the space above being occupied by Auks and Guillemots. When these birds are not present, however, they occupy a more extended space, and are not apt to descend so far. The nests, bulky, and formed of grass and sea-weeds, are placed on the shelves and small projections, as well as in crevices and on the walls of caverns; sometimes, also, on grassy spots. Frequently they are deposited on so narrow a space as to seem stuck against the face of the rock, like those of Swallows. Rowing along the bases of the cliffs, one cannot fail to view with delight these beautiful birds, perched here and there, sometimes in groups, often singly at short intervals, each in a horizontal position, singly seated on its comfortable-looking nest. The individuals not thus occupied fly about incessantly, uttering their loud and clear cries, and often approaching so near as to be easily shot. Over those which fall upon the water many collect and keep hovering and screaming, regardless of danger, so that in a short time one may obtain as many as he can reasonably desire. Human nature is so perverse that reason affords but a feeble check to appetite and impulse, else I should here deprecate the useless slaughter of these innocent birds. Parties are formed on our eastern coast for the sole purpose of shooting them; and I have seen a person station himself on the top of the Kittiwake cliff of the Isle of May, and shoot incessantly for several hours, without so much as afterwards picking up a single individual of the many killed and maimed birds with which the smooth water was strewn beneath. Nay, I have seen one who, in his books, admonishes you, with great solemnity, of the sin of shooting birds of any kind unless for some useful purpose, fire away at the poor Kittiwakes with as much glee as a schoolboy at Sparrows. It is, in fact, human nature, tyrannical and most unamiable. The noise of guns does not always frighten the sitting birds

from their nests, and those which have left them presently return when the boat has advanced a short way.

The Kittiwake feeds on small fishes, which it picks from the water, hovering with elevated wings, as well as occasionally crustacea, small shell-fish, and other marine animals, which it procures along the shores. It walks little, and not with ease, owing to the shortness of its legs; rests either standing or lying, like the other birds of this group; associates occasionally with Gulls and Terns; is of a gentle disposition, social, and altogether amiable. I have killed a few, it is true, and caused others to be killed; but of a creature so beautiful, so pure, so simple and unsuspecting, I certainly shall never shoot another individual. This gentleness of the Kittiwake, however, like that of human beings, of whom some are very gentle and almost altogether lovely, renders it liable to be much harassed by the Teasers, which force it to disgorge its food, and occasionally by the gluttonous Gulls, which carry off its young.

With us it is scarcely ever seen inland; nor does it even search the maritime pastures or the ploughed fields along the shores for worms and larvæ, like the other smaller species of its family. It is an ocean bird, that loves not the haunts of man. It flies with a rapid and constant beat of its curved wings; glides, and wheels, and hovers over the smooth sea, or skims lightly over the high waves, descending into the furrows, and rising buoyantly to surmount the advancing ridge. Its cry is clear and rather sharp, but mellow, and resembles the syllables kittiaa or kittiweea, whence its common name of Kittiwake, or, on the eastern coast of the middle division of Scotland, Kittiweeak.

In summer this species is dispersed over the arctic regions of both continents, and in winter advances southward. How far it proceeds along the European coasts has not, I believe, been determined. Mr. Audubon states that, during the autumnal and winter months, it occurs along the whole of the extensive coast of the United States, he having found it there from Maine to the mouths of the Mississippi.

The eggs, two or three in number, are of a broadly oval form, from two inches to two-twelfths more in length, an

inch and a half in breadth, pale yellowish-grey, greenish-white, or light olive-green, spotted and dotted all over with dark brown and pale purplish-grey. The young continue in the nest, or in its vicinity, until they are able to fly ; soon after which the birds disperse over the neighbouring seas.

YOUNG.—The young, when a few days old, have the bill blackish-blue, paler toward the tip, and with the oval protuberance white ; the iris dark ; the feet and claws lead-blue, the webs greyish-white. They are covered with long glossy down ; the head, neck, breast, and belly white, as are the wings ; the back grey, as well as the thighs, margined with pale yellowish-red.

When fledged, the young have the bill black, the iris and margins of the eyelids of the same colour ; the feet dark greenish-grey, the claws brownish-black. The fore part of the head, neck, and lower parts are white ; the occiput and nape greyish-black ; a narrow black crescent before the eyes, and a large blackish-grey patch behind the ears. The feathers of the back and wings are deep bluish-grey, tipped with brown ; the outer edge of the wing, the smaller coverts along the humerus, and most of the scapulars black ; the primary quills are black, the secondary with a large patch of the same. The tail is white, with a broad band of brownish-black at the end, an inch and a quarter in breadth on the middle feathers, but narrowing outwards, and not extending to the outer web of the outermost ; the terminal margins white. The quills and tail-feathers remain in autumn, but the other feathers are gradually changed.

FIRST WINTER.—When the first autumnal moult is completed, the bill is brownish-black, the iris and edges of the eyelids of the same colour, the feet dusky. The same markings as before are seen on the head, but lighter ; the lower parts white ; the back deep bluish-grey. The dark markings are diminished in extent and depth of tint. The quills and tail-feathers are not changed in spring, but the rest of the plumage is.

An individual shot in the end of April was as follows :—

Bill dark brown, with patches of greenish-yellow; angle of the mouth bright orange; edges of eyelids dark brown, tinged with orange; iris deep brown. The plumage pure white; but the back of the head mottled with pale blue; the hind-neck of that colour; a deeper spot of the same behind the ears, and the preocular bristly feathers blackish; the lower hind-neck nearly white; the back and wings pale blue; the middle wing-coverts dark brown, forming an irregular bar, which is longitudinal, when the wing is closed; the alula, outer webs of the first five primary coverts, outer web, half of the inner longitudinally, and tips of first four primaries, together with the tips of the next two, blackish-brown.

In summer the plumage is that of the adult at that season, and in the next autumn is as follows:—

ADULT IN WINTER.—The plumage as described in summer, only the hind-neck, its sides, and part of the head are light bluish-grey.

REMARKS.—The specific name *tridactyla* is not strictly correct, inasmuch as the bird has four toes, although one is so small as hardly to deserve being considered as such. Nor is the generic name *Rissa* better, it being barbarous and meaningless. But I feel that I must leave the final reformation of ornithological nomenclature to a Linnæus, wiser and more consistent than the first. All that I can do is to try to rectify the most glaring errors. As every species must have an English specific name, I have chosen Black-footed in preference to Grey-backed or Three-toed, because the single character indicated by it, together with that pointed out by the Latin specific name, will suffice at once to distinguish this from any other British bird of the family that may occur to the student.

LARUS. GULL.

THE Gulls, properly so called, are birds of large or moderate size, having the body full ; the neck thick and of moderate length ; the head large, broadly ovate, narrowed anteriorly.

Bill of moderate length, stout, straight, decurved at the end, compressed, higher near the end than at the base ; upper mandible with the dorsal line straight for half its length, then arcuato-decurvate, the ridge rather broad, convex, the lateral sinus rather short, wide, and feathered, the nostrils medio-basal, linear-oblong, wider anteriorly, covered above and behind with a sloping thin-edged plate, the branches convex, the sides beyond the nostrils sloping and a little convex, the edges very thin, direct, the tip narrow, obtuse, a little prolonged ; lower mandible narrower, much compressed, with the intercrural space long and narrow, the crura nearly erect, flattened, their lower outline concave, forming at the commissure an obtuse angle with the dorsal line, which is ascending and somewhat concave, the edges very thin and somewhat inflected, the tip narrow, but obtuse ; the gape-line commencing beneath the eyes, nearly straight until beyond the nostrils, when it becomes declinato-decurvate.

Mouth of moderate width ; palate flat, with two very prominent papillate ridges, and four series of intervening papillæ ; five ridges along the upper mandible ; posterior nasal aperture linear. Tongue emarginate and finely papillate at the base, fleshy, rather narrow, deeply channelled above, tapering to a narrowly-rounded point, and horny beneath. Œsophagus very wide throughout ; its proventricular portion wide, with a continuous belt of very small, oblong glandules, and transversely very prominent rugæ, continuous with those of the stomach. That organ rather small, ellipti-

cal, muscular ; its lateral muscles of moderate size, the lower prominent, the tendons large and radiated, the epithelium extremely dense, thick, with strong longitudinal ridges. Intestine rather long, narrow ; cœca very small, narrow, cylindrical ; rectum short, with a large globular dilatation.

Eyes rather small ; eyelids feathered, with bare crenulate margins. Aperture of ear of moderate size, roundish. Legs of moderate length, slender ; tibia bare for a short space ; tarsus rather short, somewhat compressed, covered anteriorly with numerous much-curved scutella, laterally with angular scales, behind with numerous small rectangular scales. Hind toe very small and elevated ; fore toes of moderate length, slender, the fourth a little shorter than the third, and about a fifth longer than the second, all scutellate above, and connected by reticulated membranes, of which the anterior edge is a little concave ; the lateral toes margined externally by a thick scaly membrane ; the soles flat and granulated. Claws small, slightly arcuate, somewhat compressed, toward the end depressed, obtuse, that of the middle toe with an expanded thin inner margin.

Plumage very full, close, elastic, soft, and blended ; on the back and wings somewhat compact. Feathers generally oblong, or elliptical, and rounded ; on the fore part of the head short. Wings very long, rather broad, pointed, with thirty, or a few more, quills ; the primaries nearly straight, tapering, obtuse, the first and second longest and about equal, the rest rapidly graduated ; the secondaries broad and rounded. Tail rather short, even, or slightly rounded, of twelve broad, rounded feathers.

The Gulls, which are generally distributed along the coasts, from the arctic to the antarctic ice, are vagrant, voracious birds, which seek their subsistence on the shores, or on the surface of the sea. They are incapable of diving, but swim with ease, sitting very lightly on the water. They have a strong, buoyant flight, performed by slow beats of their long, extended, arched wings ; walk and run with short steps ; emit a loud, clear, or harsh cry, and a succession of short sounds somewhat resembling a laugh. They perform a singular action with their feet upon the sands, patting them

repeatedly with considerable celerity, and at the same time retiring backwards. Their food consists of fish, flesh of dead cetacea, and land quadrupeds, young sea-birds, crustacea, mollusca, asteriæ, worms, and larvæ. In stormy weather they often leave their ordinary haunts, and proceed inland, to pick up the larvæ and worms exposed by the plough, or found in the pastures. In winter they congregate in large flocks at the mouths of rivers, or on the sands. They rest by day either on shore or floating on the water, by night on the sands or rocks, or in the fields, either standing on one foot, with retracted neck, or lying down. In the breeding season they generally keep in flocks, nestling on rocks, headlands, or islands. The nests are composed of dried grass, bits of turf, or sea weeds. The eggs, generally three, are large, oval, greyish or greenish-brown, spotted and blotched with brown and grey. The young, at first covered with parti-coloured down, soon leave the nest, especially if molested, and conceal themselves in crevices or behind stones. The bill, iris, and feet, are generally at first dark, and become lighter as the bird advances in age. The plumage, at first mottled with brown or dusky, gradually becomes lighter, the permanent colours not being acquired until they are three years old. The predominant tints are pure white, pale greyish-blue, or deep slate purple, seeming black at a distance. In winter the head and neck are streaked with brown, in summer pure white.

The genus *Larus* has various affinities. It passes so directly into *Gavia* and *Rissa*, that these groups cannot easily be defined, the whole forming a very natural group, allied on the one hand to the Petrels and Albatrosses, on the other to the Terns and Skimmers.

LARUS MARINUS. THE GREAT BLACK-BACKED GULL.

COBB. CARRION GULL. FARSPACH.



FIG. 91.

Larus marinus. Linn. Syst. Nat. I. 225.

Larus marinus. Lath. Ind. Ornith. II. 813.

Great Black-backed Gull. Mont. Ornith. Dict.

Goeland a manteau noir. *Larus marinus.* Temm. Man. d'Ornith. II. 760.

Great Black-backed Gull. *Larus marinus.* Selby, Illustr. II. 507.

Larus marinus. Great Black-backed Gull. Jen. Brit. Vert. Anim. 278.

Larus marinus. Bonap. Comp. List, 62.

Bill two inches and two-thirds along the ridge, which is much decurved toward the end, one inch high at the angle, which is prominent; tarsus three inches long; wings slightly surpassing the tail. Adult in winter with the bill light yellow, the lower mandible with an orange-red patch toward the end; the margins of the eyelids red; the feet flesh-coloured; the back and wings greyish-black tinged with purple, or dark slate-coloured, the quills largely tipped with white; the head and

hind neck white, with light brown streaks; all the other parts pure white. In summer, the bill pure yellow, the patch on the lower mandible bright carmine, as are the edges of the eyelids; the head and neck pure white, the other parts as in winter. Young with the bill brownish-black, as are the edges of the eyelids; the head and neck greyish-white streaked with brown; the upper parts mottled with brownish-black, greyish-brown, and white; the lower parts greyish-white, barred and spotted with brown; the quills brown, narrowly tipped with white, the outer primaries brownish-black; the middle tail-feathers barred with brown and white, the lateral nearly white, with brown toward the end.

MALE IN WINTER.—This is the largest of our resident species, scarcely if at all yielding in size to the Burgermeister Gull, which is but an irregular, or at least a not common visitant. It is rather stout in proportion to its length, the body being to appearance large and full; the neck of moderate length and very thick; but this fullness depends, as in other Gulls, upon that of the plumage. The head is large, ovate, considerably rounded above, and narrowed before.

The bill is shorter than the head, stout, higher toward the end than at the base; the upper mandible with the dorsal line nearly straight at first, then rising a little, and toward the end decurved, the ridge convex, the sides slightly so, the nasal groove very narrow. the edges sharp, direct, toward the end arcuato-declinate, the tip narrow but rather obtuse; the lower mandible with the angle long and narrow, the outline of the crura rather concave, the commissure prominent, the dorsal line ascending and a little concave, the sides nearly flat, the edges sharp and inflected, toward the end decurved, the tip obtuse.

The mouth is of moderate width, measuring an inch and three-fourths across; the palate flat, with two very prominent papillate ridges, and four intervening series of papillæ; on the upper mandible five longitudinal ridges. The tongue is two inches and a quarter in length, emarginate, and finely papillate at the base, rather narrow, fleshy, deeply channelled above, horny beneath, its tip narrowly rounded. The œso-

phagus, which is fifteen inches long, is about two inches and a half in width, when moderately inflated, but can be dilated to rather more than three inches. Its walls are thin, its inner coat strongly plicate when contracted. The proventricular belt is an inch and a quarter in breadth, its glands very small and cylindrical. The stomach is small, two inches and a quarter in length, an inch and three-quarters in breadth; its lateral muscles moderate, the lower prominent, the tendons large and radiated; the epithelium very dense, thick, with prominent longitudinal ridges. The intestine is fifty-three inches long, narrow, its greatest width being four-twelfths and a half; the cœca cylindrical, only half an inch in length, and a quarter of an inch in width; the rectum five inches long, eight-twelfths wide, and dilating into a globular sac, an inch and a half in diameter.

The nostrils are linear-oblong, wider anteriorly, seven-twelfths of an inch long, pervious, nearer the edge than the ridge. The eyes are rather small, their aperture five-twelfths. That of the ear roundish, and rather small. The feet are of moderate length; the tibia bare for about an inch; the tarsus slender, somewhat compressed, with twenty-four anterior scutella. The hind toe is elevated, very small, with four scutella; the anterior toes of moderate length, rather slender, the second considerably shorter than the fourth, which is exceeded by the third in the same proportion. The second and fourth have thick expanded margins, the soles are flattened, and the webs with their edges concave. On the second toe are twenty, on the third thirty-six, on the fourth thirty-four scutella. The claws are small, slightly arched, depressed, rounded, that of the middle toe with a thin expanded inner edge.

The plumage is full, close, elastic, soft; on the head, neck, and other parts blended, on the back and wings compact; the feathers in general broad, rounded, and curved. The wings are very long, of moderate breadth, pointed, with thirty-four quills; the first longest, the second scarcely shorter; the secondaries broad and rounded, the inner narrower. The tail is rather short, and even.

The bill is light yellow, the lower mandible with an

orange-red patch near the end; the edges of the eyelids orange-red, the iris pale yellow; the feet flesh-coloured, the claws dusky. The head, neck, lower parts, upper tail-coverts, and tail are white; but the head and hind neck are longitudinally streaked with greyish-brown. The back and wings are of a deep slate-colour, or greyish-black tinged with purple. The edge of the wing is white. The outer five primaries become deep black toward the end; all the quills are largely tipped with white; that on the end of the first quill is two inches and a quarter in length; on the second an inch and nine-twelfths, but crossed by a black band; on the third half an inch.

Length to end of tail 29 inches; extent of wings 64; bill along the ridge $2\frac{9}{12}$, along the edge of lower mandible $3\frac{1}{12}$, its height at the angle 1; wing from flexure $19\frac{1}{2}$; tail $7\frac{9}{12}$; tarsus $2\frac{1}{12}$; first toe $\frac{3}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{4}{12}$, its claw $\frac{7}{12}$; fourth toe $2\frac{2}{12}$, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—The female resembles the male, being only smaller.

Length to end of tail 27 inches; extent of wings 60; bill along the ridge $2\frac{1}{2}$; wing from flexure 19; tail $7\frac{1}{2}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{2}$, its claw $\frac{6}{12}$.

VARIATIONS.—The dark tint of the back and wings varies a little; the streaks on the head and neck are more or less numerous, darker or lighter; and the markings on the outer primaries differ a little. Sometimes there is a band on the white space of the first; that of the second is generally on both webs, sometimes on the inner only; and sometimes the sixth has a black band or spot close to the white tip. Individuals vary considerably in size. The largest that I have seen was 30 inches in length, the smallest 26; sometimes the bill measures 3 inches along the ridge, and the tarsus 3, or even $3\frac{2}{12}$ inches.

MALE IN SUMMER.—The bill is pure yellow, with the patch bright carmine; the edges of the eyelids of the latter

colour. The colours of the plumage as in winter, but the head and neck pure white, without streaks,

FEMALE IN SUMMER.—Similar to the male.

HABITS.—The Great Black-backed Gull is among the most beautiful of a tribe remarkable for beauty. The contrast between the dark purple tint of his back and wings and the snowy white of the rest of his plumage, with the bright carmine-patched yellow of his powerful bill, and the delicate pinkish hue of his feet, render him an object at all times agreeable to the sight. No sprinkling of dust, no spot of mud, ever soil his downy clothing; his bill exhibits no tinge derived from the subject of his last meal, bloody or half-putrid though it be; and his feet, laved by the clear brine, are ever beautifully pure. There he stands on the sandy point, the guardian as it were of that flock of not less cleanly and scarcely less lovely Herring Gulls and Sea Mews. But, not giving us more credit for our good intentions than we deserve, he spreads out his large wings, stretches forth his strong neck, runs a few paces, and, uttering a loud screaming cry, springs into the air. Some gentle flaps of those vigorous wings carry him to a safe distance, when he alights on the smooth water, and is presently joined by his clamorous companions. Buoyantly they float, each with his head to the wind, like a fleet of merchantmen at anchor, secured from the attacks of pirates by the presence of their gallant convoy. If in mere wantonness you discharge your artillery, sending a bullet skipping among the flock, they hurriedly rise on wing, fill the air with their cries, and wheel around at a safe distance, while the Black-backed Gull, disdainful to mingle with the clamorous crowd, after a few wide circlings flies off seaward, and is soon out of sight.

When watching for Eagles in a covered pit, I have seen it come to the carrion, alight at a little distance, look around, walk up to it with short steps, and commence tugging at the entrails or tearing morsels from the flesh. In this it is sometimes joined by the Herring Gull. Should a Raven arrive, the Gulls continue their repast, the parties not interfering

with each other, if the object be large ; but to the Eagle, whether the Golden or the White-tailed, they feel obliged to yield, retiring to a short distance, and walking impatiently about, until the unwelcome intruder departs.

The history of this bird may be given in few words. In Britain it is generally dispersed, some individuals remaining all the year in the neighbourhood of those places which it selects for breeding, and which occur chiefly in the northern parts, while others advance southward in autumn, and in winter and spring may be seen on all parts of the coast. Vigilant and suspicious, it is not easily approached at any season, it being of all our Gulls that which forms the most correct estimate of the destructive powers and propensities of man. Chief of its tribe, and tyrant of the seas, it evinces a haughty superiority which none of our aquatic species seem inclined to dispute. Little disposed to associate with its inferiors, it passes its leisure hours, or periods of repose, on unfrequented parts of the sands, or on shoals, or islets, often on the bosom of the sea, just behind the breakers, where it floats lightly on the waves, presenting a beautiful appearance as it rises and falls on the ever-varying surface. In winter it is scarcely gregarious, more than a few individuals being seldom seen together ; but when there are shoals of fish in the bays or creeks it mingles with the other Gulls, from which it is always easily distinguished by its superior size and very loud clear cry, which may be heard in calm weather at the distance of a mile. Frequently when flying it emits also a loud rather hoarse cackle, having affinity in sound, although not analogous in nature, to a human laugh. All the larger Gulls are in one sense laughter-loving birds ; but if we take note of the occasions when their cachinnations are emitted, we discover that so far from being the expressions of unusual mirth, they are employed to express anxiety, alarm, anger, and revenge. Its flight is strong, ordinarily sedate, less wavering and buoyant than that of smaller species, but graceful, effective, and even majestic. There, running a few steps, and flapping its long wings, it springs into the air, wheels to either side, ascends, and on outspread and beautifully-curved pinions, hies away to some distant place, In advancing

against a strong breeze, it sometimes proceeds straight forward, then shoots away in an oblique direction, now descends in a long curve so as almost to touch the water, then mounts on high. When it wheels about, and sweeps down the wind, its progress is extremely rapid. It walks with ease, using short steps, runs with considerable speed, and, like the other Gulls, pats the sands or mud on the edge of the water with its feet. It generally rests standing on one foot, with its head drawn in; but in a dry place it often reposes by laying itself down. Its food consists of small fishes, which it picks from the water while flying, of larger fishes cast on the shore, of crustacea, shell-fish, echini, and marine worms. In winter it frequents the hills and moors in search of carrion, and in summer and autumn often preys upon the young of various sea-birds. I have seen it eating the flesh of a stranded whale along with the Raven, and carrion on the hills along with that bird and the Eagle. Sometimes, but not often, it searches the ploughed fields for worms.

On the coasts of England there are few places in which it considers it safe to breed; nor are there many in the south of Scotland; but on the islets and rocks of the Hebrides, Shetland, and Orkney Islands, vast numbers annually nestle, although not many are often met with in one spot. I have, however, seen a small green islet in a lake in the Island of Lewis, which was almost covered with birds of this species; and in all the Outer Hebrides it frequently breeds in such places. The nest, which I have often found, is made in a cavity in the turf, sometimes on the bare rock, or in a hollow or fissure, and is composed of grass, tufts of *Statice armeria*, and sea weeds, with occasionally a few feathers. The eggs, generally three, sometimes two, never four, are regularly ovate, from two inches and ten-twelfths to three inches long, two inches and one to two-twelfths in breadth, rather rough, pale yellowish-grey or greenish-grey, spotted, and blotched with blackish-brown, umber-brown, and pale purplish-grey. The young, at first covered with grey down, variegated with dusky, remain some weeks in the nest if unmolested, but, should a person approach them, run off and conceal themselves in crevices or among stones, or betake themselves to the water.

Let us view the marine Vulture in a different way. Here we are, in a small boat, rowed by four persons, on the smooth bosom of the Atlantic, two miles from that grim promontory of Toe-head, and drawing near to the little island of Copay. It is a bright day, in the beginning of June, the elements have proclaimed a cessation of hostilities, and we are ready to wage war upon nature, having our two guns in trim, and a large basket to contain the spoils of many nests. Some Cormorants on the headland, stretching out their long necks, seem to be preparing for flight; a flock of Grey Geese has already left the island; many Gulls have taken the alarm, and are hovering over the crags; a little band of Oyster-catchers on the shore seem, by their cries, to be consulting among themselves; and there, as we draw near, one after another, the spotted Guillemots, leaving their nests, arrange themselves in lines, along the edges of the shelves. Now, then fire! Eight or ten of them remain. But what an uproar! The isle has been "frightened from her propriety." Herring Gulls, Common Gulls, and Oyster-catchers, wheel and scream in alarm, confusion, and despair. We are now at the landing-place, which is rather slippery; but we have nimbly leapt on shore, and advance toward the grassy bank. Under these large stones, confusedly heaped together, are many nests of the spotted Guillemot, which, contrary to the assertions of many authors, lays three eggs, on the bare gravel or rock. In these holes, which seem to have been originally made by rats in the turf, are nests of the Starling. Here is the first Gull's nest, with its three eggs; another, and another; but you must look well, otherwise many will escape notice. Let us leave our guns here, and fill our hats with eggs. There! a Duck has flown, and we find a nest of the Eider, with its five eggs wrapped in grey down. The screams of the poor Gulls are almost deafening; yet few of these birds come very near, and of the fifty or sixty black-backed species which we see, some are hovering far aloft, some perched on distant crags, and some running forward and backward on the grass, within gunshot. Their eggs are larger than those of the Herring Gull, otherwise you can hardly distinguish them here. Those of the Oyster-

catcher, generally three, are easily known by having their spots darker and more defined than those of the smaller Gull. The wild Geese have nibbled the grass quite bare in most places ; but their nests are never found in this island. The crew of our boat are running about gathering eggs ; but we have had enough of them, and therefore we shall return for our guns, and endeavour to procure some specimens of the Great Gull, which even here, in presence of their nests, it is not very easy to do, some of them even having flown far off to sea.

It is a lovely night in June ; the moon slowly emerges from behind the distant mountains—the northern horizon is still red with the glare of the departed sun—the winds have sunk to rest, and no sound is heard save the faint murmur of the waves that clash over the distant reefs. Yet hark ! the Terns are abroad, and their shrill cries come faintly on the ear, from the far-off sand-point, where, no doubt, they are engaged with a shoal of launces. Listen again ! The Oyster-catchers intermingle their clamorous and curiously modulated cries ; and now, louder than all, is clearly heard the call of the Black-backed Gull, faintly seen in the dim light. Here is one of his breeding-places, a turf-crowned crag, torn, as it were, from the rocks, and forming an inlet inaccessible to human feet. Creeping stealthily among the crags, we faintly perceive the birds as they sit on their nests ; but some of them have observed us. All spring on their feet, and a few launch into the air, uttering loud cries, which alarm the birds around. It is vain, you perceive, to try to surprise them by night or by day. Wander as long as you will in these places what more can you see ? Perhaps a more acute observer may.

Dr. Edmondston, however, has favoured me with only a brief notice of his observations. “ This species breeds on the flat grassy tops of a few inaccessible holms, or small islands, as the far-famed Cradle-holm of Noss, in considerable numbers, never in cliffs, and excludes every other bird from such localities. A pair or two, we may suppose the melancholy remnant of a more numerous class, may now and then be met with on lower and more accessible, but still flat situations. It usually produces three young, which, independently of

their size are easily distinguished from the other Wagels or Burgomasters by the more distinct speckling with black of their grey plumage. Like all the large Gulls, it is fond of carrion. In winter, they all feed much on star-fish, a maigre and frugal diet, it must be admitted. But the plethora of herring in summer amply compensates for the abstinence of winter. When flocks of Shags are passing their gluttonous siesta on the rocks, a Marinus is very often perched near them, and on such occasions he acts as their sentinel, by giving the alarm by his hoarse voice, or his taking flight when we endeavour to approach within shot. His deportment is dull and solitary, always, no doubt, having the *star* fish in his gaze."

Many interesting facts respecting it are given by Mr. Thompson, who states that it is found around the coast of Ireland throughout the year, though a few only appear to breed there.

YOUNG.—When fledged, the young have the bill brownish-black, the base of the lower mandible flesh-coloured, the tips yellowish; the iris dark brown; the feet livid flesh-colour. The head and neck are greyish-white, streaked with brownish-grey, the streaks broader on the hind-neck. The upper parts are mottled with brownish-black, brownish-grey, and dull white; the rump paler; the wing-coverts barred with greyish-brown. The primary quills are blackish-brown, slightly tipped with brownish-white. The tail-feathers are white, with a patch of brownish-black toward the end, larger on the middle feathers, which are also barred toward the base with dusky. The lower parts are greyish-white, tinged with brown, spotted and barred with dark brown.

When about a week old, the young are covered with long, soft, rather sparse down. The bill is brownish-black, the tips for a considerable space horn-coloured, tinged with yellow. The feet greyish-black, the claws brownish-black. The general colour of the down is greyish-white, tinged with yellow, spotted all over on the upper parts with deep brown, the breast free of spots, those on the rest of the lower parts paler. This description is taken from two specimens taken

from the Bass Rock, in the end of June 1824, by Mr. De Jersey.

PROGRESS TOWARD MATURITY.—After the first autumnal moult, the colours are as follows :—

YOUNG IN THE FIRST WINTER.—The bill is bluish-black, the extreme tips and a small portion of the base of the lower mandible dusky yellowish-grey ; the iris and edges of the eyelids brown ; the feet flesh-coloured, tinged with pale blue, about the tibio-tarsal joint inclining to verdigris-green ; the claws blackish-brown. The head is light grey, streaked with pale brown ; the throat greyish-white. The back is confusedly mottled with hair-brown, on a brownish-white ground, tinged with yellow, in patches increasing in size and depth of tint backwards ; the wings mottled in the same manner, but the brown deeper ; the primaries, primary coverts, and secondaries blackish-brown, narrowly tipped with greyish-white. The arrangement of the dark colour on the back is in single spots on each feather, as is also the case on the wing-coverts ; but the secondary coverts have the inner webs brown, with processes to the number of four shooting into the light colour of the outer webs, the intervals ash-grey. The bases of the feathers of the back are pale ash ; their edges and tips brownish-white. On the rump and tail-coverts white predominates. The tail-feathers are white at the base, brownish-black toward the end, tipped with white ; the middle feathers barred with brown for two-thirds, the outer white until near the end. The lower parts are whitish, tinged with grey and yellow, and marked with very pale brown spots ; the lower wing-coverts mottled with brownish-grey and pale brown ; the axillar feathers brownish-grey, barred with pale brown.

SECOND WINTER.—Bill deep brown, tinged with blue toward the end, the tips yellowish-grey ; the base, especially of the lower mandible, yellowish, tinged with brown ; the basal margin of the mouth and the bare edges of the eyelids yellowish ; the feet more decidedly flesh-coloured. The fore

part and sides of the head, the fore part of the neck, and the lower surface in general, pure white ; a few pale brown spots still remaining on the sides, the axillar feathers, and lower wing-coverts. The ground-colour of the head and hind-neck white, slightly tinged with grey, streaked with pale brown. The back confusedly mottled with pale brown and yellowish-white, tinged with ash and purplish-brown, the markings somewhat transverse, there being several bars on each feather ; the tips still whitish, those of the scapulars of considerable extent. The wings of a deeper tint than the back, hair-brown, tinged with grey and a little purple, the spots disposed in irregular bars, the tips and intervals reddish-white, tinged with brown. The primaries are blackish-brown ; the secondaries pale brown, tinged with grey and tipped with white ; the inner barred with deep brown and whitish at the end. The rump and tail-coverts whitish, slightly mottled with pale brown ; the tail-feathers nearly all white, with a few very deep brownish-black spots and patches ; an irregular bar of the same deep brown at the end ; the tips whitish.

LARUS FUSCUS. THE LESSER BLACK-BACKED GULL.

YELLOW-FOOTED GULL.

Larus fuscus. Linn. Syst. Nat. I. 225.

Larus fuscus. Lath. Ind. Ornith. II. 815.

Lesser Black-backed Gull. Mont. Ornith. Dict.

Goeland a pieds jaunes. *Larus fuscus.* Temm. Man. d'Ornith. II. 767.

Larus flavipes, IV. 471.

Lesser Black-backed Gull. *Larus fuscus.* Selby, Illustr. II. 509.

Larus fuscus. Lesser Black-backed Gull. Jen. Brit. Vert. An. 277.

Larus fuscus. Bonap. Comp. List, 63.

Bill two inches along the ridge, eight-twelfths high at the commissure, which is moderately prominent ; tarsus two inches and a half long ; wings about two inches longer than the tail ; tarsi and toes yellow. Adult, in winter, with the bill greenish-yellow, the lower mandible with an orange-red patch toward the end ; the margins of the eyelids light vermilion ; the back and wings blackish-grey, tinged with purple, or dark slate-coloured, the quills tipped with white ; the head and hind neck white, with light brown streaks ; all the other parts pure white. In summer, the bill light orange, the patch on the lower mandible vermilion, or orpiment, tinged with carmine, as are the edges of the eyelids ; the head and neck pure white, the other parts as in winter.

MALE IN WINTER.—This species, which in the colour of its plumage resembles the Carrion Gull, is inferior in size to the Herring Gull, and of rather a more elegant form than either of these species. The body, although slender, seems rather full, on account of the great mass of plumage ; the neck is of moderate length ; the head of ordinary size, broadly ovate, narrowed anteriorly. The bill is rather long, but shorter than the head, higher toward the end than at the base ; the upper mandible with its dorsal outline straight for

two-thirds, then declinato-decurvate, the ridge convex, the sides sloping and convex, until near the tip, when they are flattened and erect, the edges sharp, the tip narrow and sharp-edged; the lower mandible with the angle long and very narrow, the outline of the crura concave, and descending to the angle, where an obtuse prominence is formed, the dorsal line ascending and concave, the sides convex at the base, sloping outwards, and flattened towards the end, the edges sharp, toward the end decurved, the tip narrow, but obtuse.

The nostrils are linear-oblong, wider anteriorly, four-twelfths of an inch long, pervious, a little nearer the edge, than the ridge. The eyes are rather small, their aperture three-twelfths and a half. That of the ear roundish, and rather small. The feet are rather short and slender; the bare part of the tibia slender, and with very small roundish scales; the joint large and similarly covered; the tarsus compressed, anteriorly with eighteen scutella, which are narrow, transversely elongated, and arcuate; the hind part with several longitudinal series of small roundish subangular scales. The first toe is exceedingly small, with only one scutellum; the second with nineteen, the third with thirty-two, the fourth with twenty-two; the claws are small, curved, strong; that of the middle toe much larger, curved outwards, with a dilated thin inner edge.

The plumage is full, elastic, soft, excepting on the back and wings blended; the feathers much curved, broad, and rounded. The wings are very long, rather narrow, and pointed; the quills thirty-two; the primaries tapering to a rounded point; the first longest, the rest rapidly decreasing; the secondaries incurved and truncato-rotundate, excepting the inner. The tail is of moderate length, nearly even, the lateral feathers four-twelfths shorter.

The bill is rich yellow, with an orange-red patch on the lower mandible, the edges at the base pale vermilion, as are the margins of the eyelids. The iris pale or straw yellow, the sclerotic purplish-grey. The feet are rich gamboge-yellow, becoming paler upwards; the claws black. The plumage, with exception of the back and wings, is snow-white, but the head and neck are longitudinally streaked with pale brown.

The fore part and middle of the back, the scapulars, upper wing-coverts, and secondary quills are dark purplish-grey, or blackish-grey with a purple tinge. The primaries and their coverts are darker, their shafts black above, white beneath; all the quills tipped with white, the inner more largely, the outer two very obscurely.

FEMALE.—The female is similar to the male in colour, but somewhat smaller.

Length to end of tail 21 inches; extent of wings 54; wing from flexure $17\frac{1}{2}$; tail 6; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible $2\frac{8}{12}$; bare part of tibia $1\frac{1}{2}$; tarsus $2\frac{3}{12}$; first toe $\frac{2}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{4}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{9}{12}$, its claw $\frac{5}{12}$; fourth toe $1\frac{8}{12}$, its claw $\frac{3}{12}$.

VARIATIONS.—Excepting slightly as to size, individuals vary little. The colour of the dark plumage changes when old to a much lighter tint, approaching to deep leaden-grey. Some individuals have a white spot on the first, others on the first and second primaries, and one which I shot on the Frith of Forth has none.

MALE IN SUMMER.—From April to October, there are no streaks on the head and neck, but otherwise the plumage is as in winter. The bill is of richer tint, or light orange, with the patch on the lower mandible, the edges of the mouth and eyes, vermilion, and the feet rich yellow.

Length to end of tail $22\frac{1}{2}$ inches; extent of wings 55; wing from flexure $17\frac{1}{2}$; tail $6\frac{1}{2}$; bill along the ridge $2\frac{1}{3}$, along the edge of lower mandible $3\frac{1}{3}$, its height $\frac{6}{8}$; tarsus $2\frac{1}{2}$; first toe $\frac{2}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{4}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{1}{12}$, its claw $\frac{1}{2}$; fourth toe $1\frac{8}{12}$, its claw $\frac{3}{12}$.

The dimensions of another male:—Length 22; bill along the ridge $2\frac{3}{4}$, along the edge of lower mandible $3\frac{1}{3}$, its height $\frac{6}{8}$; tarsus $2\frac{1}{2}$; middle toe and claw $2\frac{1}{2}$.

The males described above were shot near North Berwick in the end of June 1824; a female, twenty-one inches in length, was killed by myself, at Prestonpans, in 1836.

FEMALE IN SUMMER.—The female is similar to the male.

HABITS.—This species, which at a distance can scarcely be distinguished from the Great Black-backed Carrion Gull, which it also resembles in its habits, is generally dispersed along the coasts, and permanently resident. In some districts it is of very rare occurrence, in others plentiful, and in the northern more so than in the southern parts, which is probably owing to their being more adapted for affording secure breeding-places. In May they betake themselves to unfrequented islands, headlands, and sometimes inland lakes, often in considerable numbers, and there remain until their young are able to fly, although they make extensive excursions around in search of food. Their nests, composed of withered grass, and other herbage, are placed in hollows formed in the turf, or in superficial chinks of the rocks. The eggs, generally three, differ considerably in size, and much in colour, but are usually about two inches and nine-twelfths in length, an inch and ten-twelfths in breadth, their ground colour dull yellowish-grey, light brown, or olivaceous, with spots and patches of purplish-grey and dark brown. The young leave the nest at any time if molested, but generally remain a fortnight or longer. If pursued, they readily betake themselves to the water, where they swim with ease, although not with much speed.

The flight of this bird is peculiarly elegant, resembling, however, that of the Greater Black-backed Gull, but more easy and buoyant, with the wings considerably curved. Its ordinary cry is loud, mellow, and somewhat plaintive, and when a number join in emitting it, which they sometimes do, when assembled for repose on an unfrequented beach or island, may be heard at a great distance, and is then far from being unpleasant. It also emits occasionally a cackling or laughing cry, more mellow than that of the species above named. It searches for food on the open sea, in estuaries, on the beaches, and frequently on the land, sometimes flying to a great distance from the coast. Small fishes, crustacea, echini, shell-fish, land-mollusca, and earth-worms, are its habitual food, but it also eats of stranded fishes, and devours

young birds. When shoals of young herrings are in the bays, creeks, or estuaries, it may often be seen in great numbers, intermingled with other Gulls; but when reposing, whether on the sea or on land, it generally keeps separate in small flocks.

In winter few individuals remain in the most northern parts, the greater number advancing southward. They are usually not uncommon at that season in the Firths of Tay, Forth, and Clyde, where very few, however, remain to breed. On the other hand, they are represented as numerous at all seasons on the coasts of Northumberland, the south-eastern and southern counties of England, and along the western coast. It is remarkable how much the habits of a species may vary. This, for example, is represented as in some districts breeding chiefly in marshy plains, or on islands in lakes, in others exclusively on maritime cliffs. Although I have robbed many Gulls' nests, I have never been attacked, or even menaced by any of the larger species. Other individuals, however, have experienced a different treatment. Thus, Mr. Hewitson relates of the present species:—"After they have begun to sit, they become very bold in the defence of their eggs; whilst amongst them, I was amused with one near the nest of which I was sitting: it retired to a certain distance to give it full force in its attack, and then made a stoop at my head, coming within two or three yards of me; this it continued to do incessantly till I left it. Mr. Darling, the keeper of the light-house on the island, informs me that an old woman, who was in the habit of gathering their eggs, had her bonnet almost torn to pieces, it being perforated through by their bills."

Mr. Thompson states that this species is resident in Ireland, where it is extensively distributed, but has never been observed by him anywhere so abundant as at Lough Neagh. The coasts of Norway, the countries on the Baltic, Holland, France, northern Africa, and other countries are said to be inhabited by them.

YOUNG.—The young, according to M. Temminck, have the "throat and fore part of the neck whitish, with longitu-

dinal light brown streaks ; the neck and lower parts of a whitish colour, almost entirely covered with large spots of a very deep brown ; the upper parts, and all the feathers of the wings, of a blackish-brown in the middle, all bordered with a narrow yellowish band ; tail-feathers at their base of a pale grey, marbled with black ; the other parts of a very deep dusky, terminated with white ; the quills deep black, without any white spot toward the end ; beak black, brown at its base ; feet dull ochre-yellow.

LARUS ARGENTATUS. THE HERRING GULL.

SILVERY GULL.

Larus argentatus. Gmel. Linn. Syst. Nat. I. 600.

Larus marinus. Var. B. Lath. Ind. Ornith. II. 814.

Herring Gull. Mont. Ornith. Dict.

Goûland a manteau bleu. Larus argentatus. Temm. Man. d'Ornith. II. 764.

Herring Gull. Larus argentatus. Selby, Illust. II. 504.

Larus argentatus. Jen. Brit. Vert. Anim. 276.

Larus argentatus. Temm. Man. d'Ornith. 63.

Bill two inches and a fourth along the ridge, which is much decurved toward the end, nine-twelfths high at the angle, which is prominent; tarsus two inches and a half long; wings surpassing the tail by an inch and a half. Adult in winter with the bill yellow; the lower mandible with an orange-red patch toward the end; the margins of the eyelids yellow; the feet flesh-coloured; the back and wings light bluish-grey, very slightly tinged with purple; the quills largely tipped with white, the outer six in part black, two of them with a large white spot toward the end; the head and hind-neck white, with light brown streaks; all the other parts pure white. In summer the bill pure yellow; the patch on the lower mandible bright orange, inclining to carmine; margins of eyelids yellow; the head and neck pure white; the other parts as in winter. Young with the bill brownish-black, paler at the base of the lower mandible; edges of eyelids dusky; feet purplish flesh-colour; head and neck greyish-white, streaked with greyish-brown; lower parts greyish-white, spotted with greyish-brown; upper parts variegated with dark greyish-brown and brownish-white, the feathers being margined with the latter; the quills greyish-black, as is the tail, unless at the base, where it is barred with white.

MALE IN WINTER.—The Herring Gull is next in size to the Great Black-backed and Glaucous Gulls, being considerably larger than the Yellow-footed Gull or the Iceland Gull. It is stouter also than either of the two latter, its body being to appearance large and full; the neck of moderate length and very thick; the head large, ovate, considerably rounded above, and narrowed before.

The bill is shorter than the head, stout, compressed, rather higher toward the end than at the base; the upper mandible with the dorsal line nearly straight for half its length, then decurved, the ridge convex, the sides slightly so, the edges sharp, direct, toward the end arcuato-declinate, the tip narrow but rather obtuse; the lower mandible with the angle long and narrow, the outline of the crura straight, concave toward the angle, the commissure prominent, the dorsal line ascending and very slightly concave, the sides nearly flat, the edges sharp and inflected, toward the end decurved, the tip obtuse.

The nostrils are linear-oblong, much wider anteriorly, four-and-a-half-twelfths long, pervious, nearer the edge than the ridge. The eyes are rather small, their aperture four-and-a-half-twelfths. That of the ear roundish and rather small. The feet are rather short and slender; the tibia bare for about eight-twelfths; the tarsus slender, compressed, with twenty-four anterior scutella. The hind toe elevated, extremely small, with two scutella; the anterior toes of moderate length, slender, the second considerably shorter than the fourth; the second and fourth with thick expanded margins, the soles flattened, and the webs with the margins nearly straight. On the second toe are twenty, on the third thirty-four, on the fourth thirty scutella. The claws are small, slightly arched, depressed, obtuse, that of the middle toe with a thin expanded inner edge.

The plumage is full, close, elastic, soft; on the head, neck, and lower parts, blended; on the back and wings rather compact; the feathers in general broad, rounded, and curved. The wings are very long, of moderate breadth, with thirty-four quills; the first longest, the second scarcely shorter; the secondaries broad and rounded, the inner narrower. The tail is rather short and even.

The bill is pure yellow; the lower mandible with an orange-red patch toward the end; the edges of the eyelids yellow; the iris pale-yellow; the feet flesh-coloured; the claws brownish-black. The head, neck, lower parts, upper tail-coverts, and tail, are white; but the head and neck, the throat excepted, are longitudinally streaked with very pale brown. The back and wings are light bluish-grey. The edge of the wing is white, the outer six primaries are deep greyish-black toward the end, the outermost nearly to the base, the sixth only for a very short space; all the quills largely tipped with white, the outer with an additional white patch.

Length to end of tail 23 inches; extent of wings 54; wing from flexure 18; tail 7; bill along the ridge $2\frac{1}{2}$; along the edge of lower mandible $2\frac{3}{4}$; its height at the angle $\frac{9}{12}$; tarsus $2\frac{1}{2}$; hind toe and claw $\frac{5}{12}$; second toe $1\frac{8}{12}$, its claw $\frac{3}{12}$; third toe $2\frac{3}{12}$, its claw $\frac{4}{12}$; fourth toe $2\frac{1}{12}$, its claw $\frac{3}{12}$.

FEMALE IN SUMMER.—The female resembles the male, being only somewhat smaller.

Length to end of tail 22 inches; extent of wings 53; wing from flexure $17\frac{1}{2}$; tail 7; bill along the ridge $2\frac{5}{12}$; its height at the angle $\frac{9}{12}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{4}$, its claw $\frac{4}{12}$.

VARIATIONS.—Individuals vary considerably in size, and more especially in the length and height of the bill; but the colours exhibit little difference, unless on the outer quills. In one individual the first quill is white at the end to the length of two inches and a third, the second white for four-and-a-half-twelfths, with a round spot on both webs. In another the tip of the first quill is white for half an inch, with a large white band, while the second has a white spot on both webs. In a third the first quill has a round white spot on both webs, and the tip white, while the second has a white spot on the inner web only. A fourth has a white spot on the inner web of the first quill, and none on either web of the second. It is in very old individuals that there is a large

white space on the first quill, and in young ones that there is no spot or band on the second.

MALE IN SUMMER.—The bill is of a richer yellow; the spot on the lower mandible inclining to carmine; the feet of a purer tint. There are no streaks on the head or neck, but otherwise the plumage is the same as in winter.

FEMALE IN SUMMER.—The female is similar to the male.

HABITS.—The Herring Gull, which is not more addicted to follow the shoals of herrings than several others, is by far the most numerous of our larger species, there being in all parts where I have seen it at least an hundred individuals for one of the Yellow-footed Gull, and double that number for one of the Greater Black-backed. The proportions of course vary in different localities. Thus I have seen a rock tenanted by the latter species almost exclusively, and many by the present. Mr. Selby states that it is comparatively rare on the coast of Northumberland, where the Lesser Black-backed Gull is common.

During the winter it is dispersed along the coasts, chiefly in the inlets and estuaries, where it assembles in vast numbers, when the young herrings are congregated in them. Comparatively few are then seen in the northern parts of Scotland, and scarcely any of the young, which on the other hand are numerous on the southern coasts. On extensive beaches, and especially on such as run out into an angle or point, multitudes may be seen reposing, often intermingled with Common Gulls, and sometimes with individuals of the two Black-backed species.

The flight of this Gull is strong, but buoyant, direct and unwavering when the bird is proceeding toward a distant place, and then usually elevated, but on ordinary occasions somewhat devious, although from its size this species is not capable of turning and winding so dexterously as the smaller kinds. When engaged with a shoal of fry, the Herring Gulls hover over the water, now ascending to the height of perhaps twenty feet, then skimming close over the surface, and, on observing an object, stretching upward and vibrating their

wings, and letting down their feet, so as to touch and sometimes pat the water, they pick it up without alighting. Sometimes they plunge partly into the water, and occasionally pick up their prey while swimming. All this while they emit now and then a loud and rather shrill cry. Their food consists of fishes of small size, occasionally large dead fish, crabs, echini, asteriæ, and mollusca. In winter and spring they often travel in bands over the fields, searching the pastures, and more especially ploughed land, for worms, grubs, and insects. At that season they may sometimes be seen on lakes, either solitary or in small flocks. They walk, and even run with ease, and not ungracefully. Often, on the sands, they may be seen rapidly patting the surface with their feet; but the purpose of this action is not understood, although some have supposed it to be the causing of worms to emerge. In frequented parts they are very shy, seldom allowing a person to come within two hundred yards; but where they are little disturbed they are less suspicious, although under any circumstances they keep out of reach of ordinary shot. They repose on beaches and headlands, sometimes standing on one leg, but generally lying down. During very tempestuous weather they fly inland, or betake themselves to some partially sheltered place, near high water mark, and then lie flat on the ground. On such occasions I have seen them detained several days in one place, apparently without food, the wind being so high that their excursions were but short. They may then be more easily approached; but as their flesh can scarcely be relished as food, they are not much liable to be molested, unless in the neighbourhood of towns.

In the beginning of May they resort to their various breeding places along the coasts, often in great numbers betaking themselves to small unfrequented islands, frequently also to the faces of abrupt cliffs, but sometimes settling here and there in pairs. The nest, which is often bulky, is formed of grass and herbaceous plants of various species, according to the locality. The eggs, which are generally three, vary greatly in size and colour, the smallest being two inches and a half in length, the largest two inches and ten-twelfths, their breadth from one inch and eight-twelfths to two-twelfths more;

the ground colour pale yellowish-grey, brownish-grey, light-brown, or olivaceous, sometimes dotted with dark-brown and purplish-grey, sometimes clouded in large patches, and sometimes dotted, spotted, and clouded, or even covered with tortuous and angular markings. In fact, in a place strewn with their nests, one may have difficulty in finding the eggs of any two very similar. Generally the eggs of the same nest are coloured nearly alike, but sometimes otherwise. If unmolested the young remain in the nest until their feathers are somewhat grown; but they are always ready to leave it on being alarmed. They then conceal themselves by squatting among the herbage, or in crevices. If pursued they will not hesitate at any age to betake themselves to the water. When the young are fledged, all the birds leave the breeding places, and disperse along the coasts, frequenting estuaries especially, and sands at the mouth of streams. The young birds of different flocks keep much together during the winter. The larger Gulls take three years before their plumage acquires its permanent hues, and one might suppose them capable of breeding the second year; but, whether this be the case or not, I have never seen either a pair of immature Herring Gulls having a nest, or an immatured paired with an adult bird. Sometimes, however, immature birds may be seen in the breeding places, and, on the other hand, flocks of mature birds, which seem barren, may be seen during the summer frequenting places where there are no nests. When one invades a breeding place, the birds for the most part leave their nests, and fly about, uttering loud undulated cries, now and then alight on the grass or rocks, and manifest much anxiety, but neither feign lameness, nor approach very near.

In Shetland, as Dr. Edmondston informs me, "the Herring Gull breeds almost always in cliffs of difficult access, hardly ever in flat situations." Now, as in the Outer Hebrides, it very often breeds on islands as flat as they can be in a gneiss country, and very seldom in cliffs, the difference in habits must depend upon circumstances, perhaps not easily appreciable. On an island in the Bay of Fundy, Mr. Audubon found it nestling on fir trees, and was informed that

some time before it had bred on the flat ground in the neighbourhood. "It is," Dr. Edmondston continues, "the most elegant and sagacious of all our birds. Of all birds this is the most indefatigable persecutor of the sportsman. At all seasons it is the watchful guardian of all wild animals. This habit, so generous and interesting, is, however, often fatal to itself, by exciting the vindictive feelings of man. Its carriage is stately and dignified. The young are generally three in number, and long after they have left the nest the parents continue to watch and feed them. Altogether it is a most interesting and delightful bird. Those who have made the name of Gull synonymous with stupidity have known little of the Herring Gull, or they have meant the contrary to what they have said. In spring it is found in flocks on the corn fields, picking up whatever seed the harrow may have left uncovered, and at this season it is excellent eating. The change of food seems to produce a change of structure in the stomach, which is then like the gizzard of poultry. A similar change I have seen produced on the stomach of a tame Raven, long fed on vegetable food, and this may lead to the opinion that structure is not, at least of the soft parts, an unerring or undeviating specific character. This and the Larger and Lesser Black-backed Gulls are really omnivorous, and hence they are the most frequent pets of the children of the fishermen. The young of all of them before leaving the nest are as delicate eating as young Pullets. They are here called Skories."

In the maritime Highlands and Hebrides young Gulls are called Scairags, which I suppose is the same word modified. As to the stomach, it is in all Gulls at all seasons muscular, and if it assume more of the character of a gizzard by being made to grind corn instead of digesting fish, this is not at all wonderful. The fact was known to John Hunter. Similar changes happen in other birds. I have seen the membranous stomach of even the Snowy Owl become extremely thickened, apparently from a similar cause. If all the Herring Gulls in Shetland become granivorous in spring, and feed so long on oat seed that their stomach is enlarged by it, they must be very injurious to the poor husbandmen.

YOUNG.—When about a week old, the young, covered with long soft down, have the bill brownish-black, the tip to a considerable extent reddish-white, the knob on the upper mandible whitish. The general colour is yellowish-white, tinged with red, all spotted over with blackish, the spots more distinct and darker on the head, lighter on the lower parts. The feet pale brown, as are the claws. This description is taken from two specimens brought from the Bass Rock, in the end of June 1824, by Mr. De Jersey.

When fully fledged, the young have the bill brownish-black, with the base of the lower mandible flesh-coloured; the iris brown; the edges of the eyelids dusky; the feet of a dingy flesh-colour; the claws black. The head and neck are greyish-white, streaked with brownish-grey. The upper parts are variegated with deep greyish-brown and reddish-white; the feathers being margined with the latter colour; the lower parts greyish-white, streaked and spotted with pale brown. The quills and primary coverts are brownish-black, very narrowly edged at the tip with grey. The tail is black, narrowly tipped and at the base irregularly barred with white.

PROGRESS TOWARD MATURITY.—After the first autumnal moult the colours are as follows:—

YOUNG IN THE FIRST WINTER.—The bill is bluish-black, the base of the lower mandible flesh-coloured; the iris brown; the feet purplish flesh-coloured. The head and neck are greyish-white, streaked with greyish-brown, the throat without streaks; the lower parts greyish-white tinged with yellow, the feathers spotted and barred with light greyish-brown. The upper parts are variegated with greyish-brown and greyish-white, each feather being margined and indented, or sometimes barred with the latter colour. The primary quills and their coverts are greyish-black, with their inner webs paler toward the margin, their tips narrowly-edged with dull white; the secondaries are greyish-white at the base, then grey, toward the end greyish-brown, their terminal margins greyish-white; the inner secondaries like the back. The tail is greyish-black, narrowly tipped with greyish-white,

toward the base irregularly barred with white, of which there is gradually more on the outer feathers.

SECOND WINTER.—Bill brown, dusky toward the end, with the tips yellowish-grey; iris yellowish-brown; feet flesh-coloured. The plumage is still coloured in the same manner, but the lower parts are nearly white, the brown spots and bars of the upper parts are more grey and narrower, and there is more white at the base of the tail and quills.

AFTER THE NEXT MOULT.—The bill is dull yellow, with a dusky patch on each mandible, and a little red on the lower; the iris yellow; the feet flesh-coloured. The head, neck, and lower parts are white; the back is bluish-grey, as are the wings in part, most of the small coverts being light brown. The tail is white for two-thirds, but with some narrow dusky bars, and dark brown toward the end. The primaries and their coverts are greyish-black tipped with white; the outer quill with a white spot toward the end; the secondaries are bluish-grey, with an irregular dusky patch near the end, which is white. When three years old, the bird is as described in the adult state.

REMARKS.—Having carefully examined specimens from various parts of North America, I find them clearly to belong to the same species. One brought by Mr. Fisher, surgeon of the Hecla, from the Arctic Expedition of 1821, is as follows:—

The bill and feet as described above; the wings about an inch longer than the tail; the latter slightly rounded. The bill is greenish-yellow, the upper mandible light yellow before the nostrils, the lower with a crimson spot, dusky in the centre, near the end. The feet pale flesh-colour, the claws blackish-brown. The plumage pure white, excepting the back and upper surface of the wings, which are purplish pale blue. An oblique bar of brownish-black on the outer five quills, largest on the first, on the fifth reduced to a band. The primary quills are tipped with white, the first to the

extent of two inches, but having a small brown mark near the end of the inner web, and the second quill with a white spot near the end; the secondaries are largely tipped with white, as are the larger scapulars.

Length 23 inches; extent of wings 49; bill along the ridge $2\frac{2}{10}$, its height at the angle $\frac{6}{10}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{3}{8}$.

A male, marked Winter Island, July 1, 1822, has the bill gamboge-yellow, with the spot on the lower mandible deep orange. The plumage coloured as above, the outer six quills with an oblique band of brownish-black; the first with a large white spot near the end, then a dark bar, and the tip white; the second with a white spot on the inner web.

Length 24; extent of wings 40; bill $2\frac{1}{4}$, its height $\frac{6}{10}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{3}{4}$.

Another female, killed on Winter Island on 29th June 1822, is similar to the last in its markings.

Bill $2\frac{3}{8}$, its height $\frac{5}{8}$; tarsus $2\frac{1}{4}$; middle toe $2\frac{3}{8}$.

An individual shot in the beginning of February 1824, and in its second winter plumage, has the bill horn-colour, tinged with yellow, from the base to near the fore part of the nostrils, lighter on the lower mandible, the remaining parts of both mandibles bluish-black, excepting the tips, which are yellowish-grey; the iris dark brown, the edges of the eyelids dusky; the angle of the mouth flesh-coloured; the feet pale flesh-colour tinged with blue, at the tibio-tarsal joint with green; the claws brownish-black. The forehead is whitish; the rest of the head and the neck ashy-white, streaked with pale brown; the back mottled with bluish-grey, pale brown, and yellowish-white; the rump brownish-ash, with indistinct marks of pale brown; the scapulars bluish-grey toward the base, with the principal part toward the end pale brown, a considerable portion of the end yellowish-white, of which there are also irregular spots along the edges. Primaries pale brown, deepening toward the end, the tips margined with brownish-white; wing-coverts ash-grey, mottled with hair-brown, the tips of the larger brownish-white; the primary coverts all grey, tinged with hair-brown. The secondary coverts similar, but speckled with yellowish-

white ; all more or less tipped with dull white ; the inner secondaries and their coverts barred at the end. The tail-coverts are whitish, barred with very pale brown ; the tail-feathers white, with irregular brown spots at the base, deep brown toward the end, and tipped with brownish-white. The throat is white ; the lower surface in general whitish, with indistinct spots and streaks of very pale brown ; the axillaries dusky-ash, with spots of very pale brown on both webs ; the lower tail-coverts white, with a few bars of brown at the end. Length 25 ; bill $2\frac{2}{10}$, its height $\frac{8}{10}$; tarsus $2\frac{8}{10}$; middle toe $2\frac{9}{10}$.

Having seen many Gulls of a much larger size than is usual in *Larus argentatus*, I was led to suspect that two distinct species might have been confounded under that name. An examination of several specimens showed that, although these large individuals are precisely similar in their plumage, they differ considerably in the form of the bill, which is much stronger, higher, and with a greater prominence on the lower mandible. The tarsi are stouter, a little longer, as are the toes, and the small scales and reticular spaces on the interdigital membranes are somewhat smaller, or at least less distinct and less prominent. But such differences, if we judge from analogy, are not sufficient to constitute species. Individuals of the Glaucous and Black-backed Gulls differ quite as much ; and among land-birds the Golden Eagle, Sea Eagle, Raven, Blackbird, Bullfinch, and very many others, exhibit differences in size, as well as in the form and magnitude of the bill, still greater. If species are to be formed on such grounds, *Larus marinus*, *L. glaucus*, *L. leucopterus*, *L. canus*, will each constitute at least two species. To describe this large race of the Herring Gull would be merely to repeat what I have said respecting it. Yet having two individuals before me, one from the Firth of Forth in winter plumage, the other from Grand Manan, in the Gulf of St. Lawrence, I may without impropriety give a short comparative account of them. Supposing them to represent a species, I would define it thus :—

Bill two inches and ten-twelfths along the ridge, which is a little raised above the nostrils, and much decurved

toward the end, ten or eleven-twelfths high at the angle, which is very prominent, the lower mandible with two oblique ridges at the base; tarsus two inches and eight-twelfths long; wings surpassing the tail by two inches.

Adult in winter with the bill yellow, the lower mandible with an orange-red patch toward the end; the margins of the eyelids yellow; the feet flesh-coloured; the back and wings light bluish-grey; the quills largely tipped with white, the outer six in part black, two of them with a large white spot toward the end; the head and hind neck white, with light brown streaks; all the other parts pure white.

In summer, the bill pure yellow, the patch on the lower mandible bright orange, inclining to carmine, margins of eyelids yellow; the head and neck pure white, the other parts as in winter.

The first individual approaches in size to the Black-backed Gull, and has the bill as large as in many individuals of that species. The sides of the lower mandible have two oblique ridges at the base, and its angle is very prominent, leaving the outline on either side considerably concave. The nostrils are linear-oblong, five-twelfths long. On the tarsus are twenty-four scutella, on the hind toe two, the second toe twenty-five, on the third thirty-six, on the fourth thirty-eight. The wings and tail are in all respects as in *Larus argentatus*. The first quill is white for two inches at the end, the second white at the tip, and with a white spot near the end, the rest tipped with white; five of the primaries more or less black, the sixth with a faint dusky mark.

Length to end of tail 26 inches; wing from flexure $18\frac{3}{4}$; tail $7\frac{3}{4}$; bill along the ridge $2\frac{1}{2}$; along the edge of lower mandible $3\frac{1}{4}$; tarsus $2\frac{8}{12}$; first toe $\frac{3}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{0}{12}$, its claw $\frac{1}{12}$; third toe $2\frac{4}{12}$, its claw $\frac{6}{12}$; fourth toe $2\frac{3}{12}$, its claw $\frac{4}{12}$.

The American specimen, although probably not more than three years of age, two of the tail-feathers having a dusky spot upon them, measures as follows:—

Length to end of tail $27\frac{1}{2}$ inches; wing from flexure $18\frac{1}{4}$; tail $7\frac{1}{4}$; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible 3, its height at the knob $\frac{1}{12}$; tarsus $2\frac{7}{12}$; hind toe

$\frac{3}{1\frac{1}{2}}$, its claw $\frac{2}{1\frac{1}{2}}$; second toe $1\frac{8}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; third toe $2\frac{2}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; fourth toe $2\frac{1}{1\frac{1}{2}}$, its claw $\frac{4}{1\frac{1}{2}}$.

There is no real difference, I think, between such birds and those of smaller size. Were we to distinguish species by characters so slight as they exhibit, we might fall into the same mistake as M. Brehm, who, according to M. Temminck, formed six species, viz., the Great, Grey, Silver-grey, Silver-blue-grey, Kleine, and American Silver-Gulls, out of "two large parcels of Herring Gulls which I sent to him. Most of these individuals were killed on our sea-coasts, and known to be only *Lari argentati*, but selected, on purpose, from a multitude of individuals, varying more or less from each other in size, dimensions of parts, and the blue parts of the plumage." The Western Gull, *Larus occidentalis*, which I described in Mr. Audubon's fifth volume, seemed to me distinct from specimens procured on the eastern side of North America; yet, as will be seen from its description and dimensions, it differs little from those described above. Yet it is quite possible that several distinct species may be confounded under the common name of *Larus argentatus*. It is only, however, by closely observing the habits of individuals of these different sizes that one can obtain certainty on the subject. With us the very large individuals are comparatively rare, and keep somewhat separate from the rest. Upon the whole, I cannot affirm whether they really form a distinct species, or are merely large birds of *Larus argentatus*.

LARUS GLAUCUS. THE GLAUCOUS GULL.

BURGOMASTER, or BURGERMEISTER. ICELAND GULL.



FIG. 95.

Larus glaucus. Brunnich. Ornith. Boreal. No. 148? Gmel. Syst. Nat. I. 600?

Larus glaucus. Lath. Ind. Orn. II. 814?

Goeland Burgermeister. *Larus glaucus.* Temm. Man. d'Ornith. II. 757.

Iceland Gull. Edmondston. Mem. Wern. Soc. IV. 176, 182.

Larus glacialis. Greenland Gull. MacGillivray. Mem. Wern. Soc. V. 270.

Glaucous Gull. *Larus glaucus.* Selb. Illustr. II. 498.

Larus glaucus. Glaucous Gull. Jen. Brit. Vert. An. 279.

Larus glaucus. Bonap. Comp. List, 63.

Bill two inches and three-fourths along the ridge, which is moderately decurved toward the end; ten-twelfths high at the angle, which is prominent; tarsus three inches long; wings about an inch shorter than the tail; total length from twenty-six to thirty-two inches. Adult in winter with the bill wine-yellow, the lower mandible with an orpiment-red patch toward the end; the margins of the eyelids straw-yellow; the feet flesh-coloured; the back and wings light bluish-grey; quills

all white at the end; the head and neck white, streaked with very pale brown; All the other parts pure white. In summer, the bill gamboge-yellow, the patch on the lower mandible carmine, as are the edges of the eyelids; the head and neck pure white, the other parts as in winter. Young with the bill brownish-black toward the end, at the base greyish-yellow, the feet flesh-coloured; the general ground colour of the plumage pale yellowish-grey; the head and neck longitudinally streaked with very pale brown; the upper parts with transverse irregular bands; the lower confusedly mottled and barred with pale brown and yellowish-white; the quills greyish-white, irregularly marked with pale-brown; the tail pale-grey spotted and barred with pale-brown.

MALE IN WINTER.—This species, which is about the same size as the Black-backed Gull and equally robust, has the body large and full; the neck of moderate length and thick; the head large, ovate, anteriorly narrowed.

The bill is shorter than the head, stout, less compressed than usual, slightly higher toward the end than at the base; the upper mandible with the dorsal line nearly straight for half its length, arcuato-declinate toward the end, the ridge broadly convex, the sides rapidly sloping and slightly convex, the nasal groove very narrow, the edges sharp, direct, toward the end arcuato-declinate, the tip obtuse; the lower mandible with the angle long and narrow, the outline of the crura nearly straight until near their junction, when a moderate prominence is formed, the dorsal line ascending and very slightly concave, the sides nearly erect and flat, the edges sharp and slightly inflected, toward the end decurved, the tip narrow but obtuse.

The nostrils are linear-oblong, wider anteriorly, five-twelfths of an inch long, medial, nearer the margin. The eyes are rather small, their aperture five-twelfths. The feet are of moderate length and rather slender; the tibia bare for three-fourths of an inch; the tarsus slender, compressed, with twenty-six anterior scutella; the hind toe elevated, very small, with two scutella; the anterior toes of moderate length, slender; the second considerably shorter than the

fourth, and with twenty-four scutella, the third with thirty-four, the fourth with thirty-two. The edges of the webs are concave, the soles flattened, the margins of the lateral toes expanded and thick. The claws are small, slightly arched, depressed, rounded, that of the middle toe with a thin expanded inner edge.

The plumage is full, close, elastic, soft, and blended; on the back and wings somewhat compact; the feathers in general rounded and curved. The wings are very long, but when closed shorter by about an inch than the tail, of moderate breadth, pointed, with thirty-four quills; the first about two-twelfths shorter than the second, the rest rapidly graduated; the secondaries broad and rounded, the inner narrower. The tail is rather short and slightly rounded.

The bill is wine-yellow, the lower mandible with an orpiment patch near the end; the edges of the eyelids pale yellow; the feet flesh-coloured, the claws bluish-black. The head, neck, lower parts, rump, and tail are white; but the head and neck are longitudinally streaked with very pale greyish-brown. The back and wings are pearl-grey tinged with blue or light bluish-grey; the edge of the wing, a considerable portion of the outer primaries toward the end, the tips of all the other quills, white; the shafts of the first quill pure white, of the rest gradually tinged with ash-grey.

Length to end of tail 30 inches; extent of wings 62; wing from flexure $19\frac{1}{2}$; tail $8\frac{1}{2}$; bill along the ridge $2\frac{3}{4}$, along the edge of lower mandible 3, its height at the angle $1\frac{1}{2}$; tarsus 8; hind toe $\frac{3}{1\frac{1}{2}}$, its claw $\frac{2}{1\frac{1}{2}}$; third toe and claw $2\frac{1}{1\frac{1}{2}}$.

FEMALE.—The female is similar to the male, but somewhat smaller.

Length to end of tail 28 inches; extent of wings 60; bill along the ridge $2\frac{3}{4}$, its height $\frac{7}{8}$; tarsus $2\frac{1}{1\frac{1}{2}}$; middle toe and claw $2\frac{3}{4}$.

VARIATIONS.—Adult individuals differ considerably in size, the largest being 31 inches in length, the smallest 27. This species is, perhaps, generally longer than *Larus ma-*

rinus, but inferior in extent of wing. It is difficult to decide which of the two species is largest; nor is it, perhaps, a matter of much importance. The plumage varies but slightly in tint.

MALE IN SUMMER.—The bill is gamboge-yellow, with the patch on the lower mandible carmine, as are the edges of the eyelids. The plumage is coloured as in winter, but the head and neck are streaked with pale greyish-brown.

FEMALE IN SUMMER.—The female is similar to the male.

HABITS.—This large and powerful Gull, the burgomaster of seamen as well as authors, although both have sometimes confounded it with the next species, is an inhabitant of the most northern regions of the globe, breeding in the arctic parts of America, from Labrador northward, in Iceland, and Norway; and advancing southward in winter, although to no great extent. According to Dr. Richardson, “it is notoriously greedy and voracious, preying not only on fish and small birds, but on carrion of every kind. One specimen killed on Captain Ross’s Expedition disgorged an Auk when it was struck, and proved, on dissection, to have another in its stomach. Unless when impelled to exertion by hunger, it is rather a shy inactive bird, and has little of the clamorousness of others of the genus.”

Dr. Edmondston, who first introduced it to notice as a British bird, having obtained in Shetland a specimen of the young in the autumn of 1809, and another in 1814, which he presented to Mr. Bullock, and subsequently several more, supposing it to be not previously described, proposed naming it the Iceland Gull, *Larus islandicus*. This was in March, 1821, and in that month of the following year he described an adult individual in winter plumage, also obtained in Shetland, where, as he informs us, the species occurs during the cold season, in large flocks, composed of both old and young, although, generally speaking, it is rare. “Its favourite resorts are the estuaries of the more exposed bays, a few miles off the land, where it is often found assiduously attending

the fishing-boats, to pick up any offals that may be thrown overboard ; and it is often taken by a line and hook baited with fish, when engaged in this pursuit. It is greedy and voracious to a proverb ; and when allured by carrion, which seems to be its favourite food, becomes comparatively indifferent to danger. It then quits the ocean and headlands, enters the bays, and boldly ventures inland. Its usual deportment is grave and silent, exhibiting little of the characteristic vivacity or inquisitiveness of many of its tribe, and it is roused to exertion chiefly by a sense of danger, or the cravings of hunger. When it flies it extends its wings more than the other species of Gull, and its flight is also more buoyant ; and, when not in quest of food, it is of a reserved disposition, and seldom comes within the range of a fowling-piece, but soars at a respectful distance, uttering, at intervals, a hoarse scream, of a sound peculiar to itself. It exhibits none of that remarkable instinct so predominant in many species of the genus, which prompts them, frequently at the hazard of their own lives, to warn other animals in the vicinity of the sportsman ; but when once alarmed, it commonly flies off. Its muscular vigour is peculiarly great, proportionally superior to that of the other Gulls ; and the power and execution of the bill are so formidable, as to compel one to be very circumspect in approaching it when wounded. It is more perfectly an oceanic bird than perhaps any of the larger species of the genus ; and from its habits might be regarded as forming, in some measure, a link between the more prominently-defined Gulls and Petrels. I have always observed this species to be uncommonly fat when it first arrives in Zetland, in autumn. Indeed, I hardly remember ever seeing any bird equal to it in this respect,—a circumstance which, together with that of the singular compactness of its plumage, and voracious avidity for carrion, first induced me to suspect this marine vulture to be a native of the higher latitudes.” He then concludes as follows :—“ If the opinions which I have suggested regarding this Gull be adopted, they will present to ornithologists, of a numerous and very interesting genus, a well-defined species, before obscurely known, assuredly undescribed, as a British bird, and may authorize the trivial name of *Larus Islandicus*,

by which I have proposed to distinguish it, as expressive both of its arctic haunts and of the vulgar appellation by which it is known in the Zetland Islands."

I have seen this bird in the Outer Hebrides, where, however, it seemed to be of very rare occurrence. An adult killed by Mr. John Ledingham, an immature bird killed by Mr. Alexander Chalmers, in the end of November, 1846, and another shot by Mr. Davidson, in January, 1849, near Aberdeen, are all that are known to me to have been obtained on that coast. In the Firth of Forth it must be of rare occurrence, as I have seen only one individual procured there. Mr. Selby, however, informs us that "it occasionally extends its equatorial flight as far as the Northumbrian coast, where several have at different times come under his inspection in a recent state. These, with the exception of one in the adult winter plumage, have all been young birds; some, from their spotted and brown appearance, the young of the year; others, where the markings had become paler, and the ground of a pure white, such as had undergone one or perhaps two autumnal moultings. It has occurred here and there all round the coasts of England, and in a few instances in Ireland.

Individuals have never been known to breed in any part of the British Islands. Two eggs, presented to me by Mr. Audubon, are of a rather broad oval shape, pale yellowish-grey, marked all over with dots and small spots, generally not exceeding two-twelfths of an inch in diameter, of dark-brown, with spots and blotches of pale purplish-grey. The length of the largest is three inches and two-twelfths, its breadth two inches and two-twelfths. They are extremely similar to the eggs of *Larus marinus*, which they, however, considerably exceed in size. "Its eggs," quoth Mr. Rennie, in his edition of Montagu's Dictionary, "are greenish, elongated, and marked with six or eight black blotches." Has he ever seen them? No; the description is borrowed from Temminck, "*pond des œufs verdâtres, allongés vers le bout et marqués de six ou huit taches noires.*" These errors are lamentable, for they would lead us to infer that the ornithologists are little to be trusted. I find that Temminck has

borrowed his description from Latham :—" *Ovum virescens, ad apicem minorem elongatum, maculis 6-8 difformibus nigris.*" It is not worth while to trace it any farther. Surely, in this matter, these people are mere compilers.

YOUNG.—The bill is horn-colour, or pale yellowish-grey ; the upper mandible brownish-black beyond the nostrils ; the lower beyond the angle. The feet are flesh-colour ; the claws lightish-brown. The general colour of the plumage is pale yellowish-grey, with a tinge of brown ; the head and neck marked with longitudinal streaks of very pale greyish-brown ; the upper surface in general marked with transverse irregular bars of pale-brown, becoming larger and of a deeper tint on the hind parts, each feather being whitish-grey at the base, and in the rest of its extent with several alternate bars of pale-brown and whitish-grey, tinged with yellow, the tip yellow. On the tail the bars are partially substituted by irregular spots. The lower surface is confusedly mottled with very pale-brown, tinged with ash-grey and yellowish-white ; the lower wing-coverts are very pale-grey, mottled with very pale brownish-grey. The primary quills are greyish-white, finely mottled with very pale greyish-brown on the outer webs ; the secondaries distinctly mottled on both webs, and toward the end irregularly banded, the inner like the back.

This description is from an individual presented to me by Dr. Edmondston, compared with several others in the same state.

Length to end of tail 26 inches ; wing from flexure $18\frac{1}{2}$; tail $7\frac{1}{12}$; bill along the ridge $2\frac{1}{12}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{2}$, its claw $\frac{4}{12}$.

YOUNG IN SECOND WINTER.—The bill is somewhat lighter. The plumage presents the same appearance, but is paler, and the brown markings narrower. The principal differences are these :—The larger scapulars are pale ash-grey nearly to the end ; the primaries are also pale ash-grey, white toward the end, and with very few brown markings ; the secondaries also ash-grey until near the end. The tail is minutely, not

largely, mottled, paler, and with the tip white. The axillaries are but slightly marked; the lower wing-coverts very pale ash-grey, without any markings.

This description is also from a skin presented by Dr. Edmondston.

Length to end of tail 27 inches; wing from flexure $18\frac{1}{2}$; tail $7\frac{1}{4}$; bill along the ridge $2\frac{5}{12}$; tarsus $2\frac{3}{4}$; middle toe $2\frac{1}{2}$, its claw $\frac{6}{12}$.

It appears that in the third winter the colours are nearly completed. A bird in the state which may be presumed to be this, and which was shot in the Firth of Forth, near Musselburgh, in February, 1837, I examined in the recent state. Its description is as follows:—

YOUNG IN THIRD WINTER.—The bill is yellowish flesh-colour, with only a dusky spot on each mandible toward the end; iris dull grey; the edges of the eyelids yellow; the feet flesh-colour; the claws light greyish-black. The head and neck are white, with pale brown streaks, which are large and more distinct on the hind part of the neck, small and faint on its fore part; the rest of the lower parts white. The back and wings are light bluish-grey, as in the adult; the quills of a paler tint, fading toward the end into white. The tail is white, with numerous undulated lines of very pale brown.

Length to end of tail 29 inches; extent of wings 60; wing from flexure $19\frac{1}{2}$; tail 9; bill along the ridge $2\frac{7}{12}$; along the edge of lower mandible $3\frac{7}{12}$; tarsus $2\frac{7}{12}$; first toe $\frac{4}{12}$, its claw $\frac{5}{12}$; second toe $1\frac{10}{12}$, its claw $\frac{7}{12}$; third toe $2\frac{4}{12}$, its claw $\frac{10}{12}$; fourth toe $2\frac{2}{12}$, its claw $\frac{8}{12}$.

REMARKS.—In this species the bill is generally much inferior in height to that of *Larus marinus*; but individuals occur in which it is equally large. I think, upon the whole, that in bulk this bird exceeds that just mentioned; and Captain Sabine states that the largest individual of either species that he met with was a male of *Larus glaucus*, killed in Barrow's Strait, of which the length was thirty-two inches, the extent of wings sixty-five, the tarsus three inches and a half long, while the bill, which was prodigiously

strong, measured upwards of four inches. On the other hand, many individuals that I have seen were inferior in size to others of *Larus marinus*. The eggs of the Glaucous Gull are also larger than those of *Larus marinus*.

In the marine state this species is not liable to be mistaken for any other, excepting *Larus leucopterus*, which it almost exactly resembles in colour, but greatly exceeds in size. The principal points of difference are the following :—The nostrils are much narrower than in *Larus leucopterus*; the whole form more robust; the head and neck in particular larger; the bill more elongated; and the wings shorter. It is in the dimensions, however, that we are to look for the most decisive characters; the present bearing to *Larus leucopterus* nearly the same relation that *Larus marinus* bears to *Larus flavipes*, or the Raven to the Carrion Crow. The young also can be confounded only with those of *Larus leucopterus*, from which they differ chiefly in size, being much paler than those of any other large species, and without the dark quills and tail of the others.

Although on a former occasion I gave the appropriate name of *Larus glacialis*, and Greenland Gull, to this species, convinced that the descriptions of the older authors referred as much to *Larus leucopterus* as to it, yet, finding that it is now generally well known by the name of *Larus glaucus* and Glaucous Gull, and more especially as it was intelligibly described by Temminck under that name, previous to the publication of my remarks, I am willing, in a matter of so little importance, to yield to the general opinion. At the same time, the specific name *glaucus* is equally applicable to *Larus leucopterus*, and the specific name *leucopterus* is equally applicable to *Larus glaucus*, both species being glaucous, and both having the tips of the wings white. There is nothing more inconsistent than our nomenclature. If two dark-backed Gulls are correctly named, the one the Greater Black-backed, the other the Lesser Black-backed, should not our two glaucous or hoary-backed Gulls be named, the one the Larger the other the Lesser?

LARUS LEUCOPTERUS. THE WHITE-WINGED GULL.

LESSER ICELAND GULL.

Larus Islandicus. Iceland Gull. Edmondston, Mem. Wern. Soc. V. 268.

Larus arcticus. Northern Gull. MacGillivray, Mem. Wern. Soc. V. 268.

Mouette leucoptere. *Larus leucopterus.* Temm. Man. d'Ornith. X. 467.

Iceland Gull. *Larus Islandicus.* Selb. Illustr. II. 501.

Larus Islandicus. Jen. Brit. Vert. Anim. 279.

Larus leucopterus. Bonap. Comp. List, 63.

Bill nearly two inches along the ridge, which is moderately decurved toward the end, eight-twelfths high at the angle, which is little prominent; tarsus two inches and a half long; wings a little longer than the tail; total length from twenty to twenty-five inches. Adult in winter with the bill wine-yellow, the lower mandible with an orpiment-red patch toward the end; the margins of the eyelids yellowish; the feet flesh-coloured; the back and wings light bluish-grey; quills all white at the end; the head and neck white, streaked with very pale brown; all the other parts pure white. In summer, the bill gamboge-yellow; the patch on the lower mandible orange-red, as are the edges of the eyelids; the head and neck pure white, the other parts as in winter. Young with the bill brownish-black toward the end, at the base pale flesh-coloured; the general ground colour of the plumage pale yellowish-grey; the head and neck longitudinally streaked with very pale brown; the upper parts with transverse irregular bands; the lower confusedly mottled and barred with pale brown and yellowish-white; the quills greyish-white, irregularly marked with pale brown; the tail greyish-white, spotted and barred with pale brown.

MALE IN WINTER.—This Gull, somewhat inferior in size to *Larus argentatus*, but in proportion and colour extremely similar to *Larus glaucus*, to which it bears the same relation, in both respects, as *Larus flavipes* bears to *Larus marinus*, was first made known as a British bird by Dr. Edmondston, who obtained specimens of it in Shetland.

The bill is shorter than the head, stout, compressed, slightly higher toward the end than at the base; the upper mandible with the dorsal lines nearly straight for half its length, arcuato-declinate toward the end, the ridge convex, narrow before the nostrils, the sides rapidly sloping and very slightly convex, the edges sharp, direct, toward the end arcuato-declinate, the tip narrow and rather acute; the lower mandible with the angle long and narrow, the outline of the crura nearly straight until near the angle, which is moderately prominent, the dorsal line ascending and very slightly concave, the sides nearly erect and somewhat convex, the edges sharp and slightly inflected, the tip narrow but obtuse.

The nostrils are linear-oblong, wider anteriorly, nearly five-twelfths of an inch long, medial, nearer the margin. The eyes are rather small, their aperture four-twelfths. The feet are short and slender; the tibia bare for ten-twelfths of an inch; the tarsus slender, compressed, with twenty-two scutella; the hind toe elevated, very small, with two scutella, the second with twenty-four, the third with thirty-four, the fourth with thirty-two; the edges of the webs are very concave, the soles flat, the margins of the lateral toes expanded. The claws are small, slightly arched, compressed, obtuse, that of the middle toe with the inner edge expanded and thin.

The plumage is full, close, elastic, very soft, on the back and wings somewhat compact. The wings are very long, and reach, when closed, to the end of the tail; the first quill longest, the second slightly shorter, the rest rapidly graduated; the secondaries, twenty-four in number, broad, narrowly rounded at the end. The tail is rather short, even.

The bill is wine-yellow, the lower mandible with an orpiment patch near the end; the edges of the eyelids yellow; the feet pale flesh-coloured, the claws greyish-brown; the

iris pale yellow. The head, neck, lower parts, rump, and tail are pure white ; but the head and neck are longitudinally streaked with very pale greyish-brown. The back and wings are pearl-grey tinged with blue, or light bluish-grey, of a paler tint than in *Larus glaucus* ; the edge of the wing, a large portion of the outer primaries toward the end, the tips of all the other quills, white, as are their shafts.

Length to end of tail 24 inches ; extent of wings 50 ; wing from flexure $17\frac{1}{2}$; tail $6\frac{1}{2}$; bill along the ridge $1\frac{3}{4}$, along the edge of lower mandible $2\frac{1}{4}$; tarsus $2\frac{1}{2}$; first toe $\frac{1}{12}$, its claw $\frac{3}{12}$; third toe $2\frac{1}{4}$, its claw $\frac{4}{12}$.

FEMALE IN WINTER.—Similar to the male, but smaller.

VARIATIONS.—Great differences in size are observed in adult individuals of this species ; the largest that I have seen measuring 26 inches in length, the smallest 20 ; but as they were merely skins, these dimensions cannot be much depended upon. The bill and tarsi, however, vary in the same proportion. The colours exhibit no remarkable change.

MALE IN SUMMER.—Bill gamboge-yellow, with an orange-red spot on the lower mandible ; iris pale yellow, margins of eyelids orange-red ; feet pale flesh-coloured. The plumage coloured as in winter, but the head and neck pure white.

FEMALE IN WINTER.—Similar to the male in colour.

HABITS.—This species has been found in summer on the coasts of Greenland, Labrador, and other arctic regions ; whence it migrates southward in autumn, advancing as far as Boston along the eastern shores of America, while in Europe it appears along the continental shores as far southward as Holland and Belgium. In Britain, it has been found in Shetland by Dr. Edmondston, from whom I have a specimen. According to Messrs. Baikié and Heddle, "one or two examples have been obtained in Orkney, one of which is now preserved in the College Museum, Edinburgh." I have seen two individuals shot in the neighbourhood of Banff by Mr.

Edward. In the end of October, 1846, Mr. Alexander Chalmers, then one of my pupils, shot one on the sands near Aberdeen. The three last specimens were in their first winter plumage. Mr. Selby states that a few occasionally stray as far southward as the coast of Northumberland, where he has obtained three or four specimens, all immature birds. Mr. Yarrell mentions an adult specimen taken in Yorkshire, another in the collection of John Malcolm, Esq., and a young bird obtained in the London market by Mr. Bartlett in the winter of 1838. On the west coast of Britain, it has been seen by John Sinclaire, Esq., in the Island of Arran, and at Ballantrae, in Ayrshire, as stated by Mr. Thompson, who also gives a few instances of its occurrence in Ireland.

Its habits are described by Faber, as observed by him in Iceland, where, however, it does not breed, it being the only Gull that passes the winter there without breeding in summer. He represents it as so tame that it came to the house to obtain the garbage thrown away by the inhabitants. Mr. Yarrell, in his condensed account of Faber's remarks, says:—"Its manners differ from those of the Glaucous Gull, which has the habits of the Great Black-backed Gull, and moves with more energy. The nature of the White-winged Gull more resembles that of the Herring Gull; its deportment and flight are more graceful; it hovers over its prey, is somewhat greedy, always active, and is not afraid to fight with equal or superior antagonists for its food." Dr. Edmondston states that it is of much less frequent occurrence in Shetland than the Glaucous Gull, with which, however, it associates, and to which it is similar in its habits and instincts, although somewhat more lively and active.

YOUNG.—When they appear on our coasts in the end of autumn, the young are as follows:—The bill is very pale flesh-coloured as far as the anterior extremity of the nostrils, beyond which both mandibles are brownish-black. The feet are pale flesh-coloured, the claws brownish-black. The plumage is very pale yellowish-grey; the head and neck streaked, the upper parts marked with narrow, undulated bars of pale greyish-brown; the tail spotted and barred with the same;

the first five quills without markings, and of a greyish-white colour. The lower parts are a confused mixture of pale grey, very light brown, and yellowish-white. Some of the dimensions of two individuals in this state are as follows:—

Length 23, 20; bill along the ridge $1\frac{7}{8}$, $1\frac{1}{2}$, its height at the knob $\frac{5}{8}$, $\frac{7}{12}$; tarsus $2\frac{3}{8}$, 2; middle toe and claw $2\frac{3}{8}$, $2\frac{2}{12}$.

REMARKS.—In size and proportions the species is nearly allied to *Larus argentatus*; from which it differs in having the bill smaller, the nostrils narrower, and the outer primaries without any black markings at any age. Although much inferior in size, it is more nearly allied to *Larus glaucus*, which it entirely resembles in colour, the bluish-grey tint of the back and wings being merely paler.

In a paper read to the Wernerian Natural History Society, on the 24th March, 1821, Dr. Edmondston described, as having been observed by him in Shetland, a large Gull, known to the Shetlanders under the name of Iceland Gull, or Iceland Scorie, although neither he nor they had any certainty of its occurring in that country. On the 23d March, 1822, another paper was read describing an adult individual of the same species, to which he proposed giving the name of *Larus islandicus*, or Iceland Gull. This bird, however, was found to be the Burgomaster, or Glaucous Gull, *Larus glaucus* of Temminck and others, of which the first satisfactory account is that given in a Memoir of the Birds of Greenland by Captain Edward Sabine, in which he enumerates the species observed by the Expedition under Captain Ross in 1818, Linn. Trans. XII. 527. His description is sufficiently detailed and correct to remove all doubt as to the species. He observes that, from specimens in his brother's possession, he is enabled to render the history of the plumage complete, and at the same time to add it to the British Fauna; from which we have to infer that one or more specimens in Mr. Sabine's collection were from Shetland or Orkney. This part of the volume was published in 1818. In 1820, M. Temminck, in the second edition of his *Manuel d'Ornithologie*, gave a full account of the species, under the same name of *Larus glaucus*, describing it with his usual accuracy and

precision, but only in its summer plumage. A detailed description of the bird in its mature and young states, in winter plumage, was afterwards given, in the fourth volume of the Memoirs of the Wernerian Society, by Dr. Edmondston, in two separate papers, in the first of which, read on the 24th March, 1821, he introduces it as a new species, and in the other, read on the 23d March, 1822, remarks definitively, that although it might have previously been obscurely known, it was now for the first time described as a British species, and might be named *Larus Islandicus*, that name being both designative of its "arctic haunts" and commemorative of the "vulgar appellation by which it is known in the Zetland Islands." In a paper read on the 8th March, 1823, in which he alludes to an opinion long before adopted by him of there being two species in Shetland to which the name of Iceland is applied by the natives, "the one having to the other a relation analogous to that which exists between the Greater and Lesser Black-backed Gulls," he describes the *Larus leucopterus* of the present article, and proposes transferring to it from the larger species the name of *Larus islandicus*. This species I afterwards described under the name of *Larus arcticus*, which I conceived to be more appropriate, the bird not being, in fact, known to breed in Iceland. Most authors, unless when it suits a special purpose, take priority of name as an established rule; and if Dr. Edmondston first described the bird in question, they would call it, as he has done, the Iceland Gull. Others, discarding priority, would hold that a naturalist, in naming an object, must describe it intelligibly, otherwise his name cannot be adopted. Now, it is maintained by M. Temminck that Faber made mention of it in 1820, and gave a correct description of it in his *Prodromus* of the Birds of Iceland, under the name of *Larus leucopterus*; so that, on the principles of both priority and intelligibility, Faber's name ought to be adopted. Unless we were to give the bird a more appropriate name than either *islandicus* or *leucopterus*, I do not see how we can with propriety reject the latter, even although the bird was unknown to the ornithologists of Great Britain and Ireland until they were favoured with Dr. Edmondston's description of it. That

gentleman has, among other notes respecting the birds of Shetland, sent me the following, having reference to this very question. The reader, after perusing them, will be enabled to judge for himself:—

“Greater and Lesser Iceland Gulls. Almost all I have to say of these is to be found in my papers regarding them in the *Wernerian Transactions*, published some years ago. I saw and shot the first specimen, a young bird, of the Great species, in autumn 1809. In the spring of 1814, I sent a similar specimen, and remarks on the species, almost verbatim what are contained in my first paper in the *Wernerian Memoirs*, to Mr. Bullock, of London; and that specimen, the only one which that acute and experienced observer had ever seen, continued to be exhibited in his *Piccadilly Museum* until its dispersion. This specimen Mr. Bullock told me was purchased by Mr. Sabine. I intended that the observations sent should be laid before the *Linnæan Society*; but I went shortly afterwards to the Continent. On my return, Mr. Bullock mentioned to me that the paper had been sent for perusal to a Mr. Sabine, from whom he had not again been able to obtain it. Mr. Bullock further told me that the different London ornithologists, among the rest Dr. Latham, who saw and examined my specimen, knew nothing of the species to which it belonged. Before 1814 I had imbibed the opinion, and expressed it in the paper above alluded to, of the existence of another species, the Lesser Iceland Gull, the accuracy of which my later observations, and those of others, have confirmed. Thus stand the facts, as far as I am concerned. Although it is not my nature to be obtrusive, common justice entitles me to assert that I was the first, more recently, who drew attention to these two species, clearly distinguished, and vernacularly named them, and, moreover, proved that they were regular winter visitants of the British Isles. Whatever might be the claims of the older writers, or opinions on the Continent, these birds had been, until my specimens and paper appeared, forgotten by British zoologists. When an ornithologist such as Latham knew nothing of such a species, it was not to be supposed that a Shetland youth, immersed in the obscurity of his

native islands, and unacquainted with the literature of natural history, should, previously to his own observations, have been aware of those of others ; and, as far as he was concerned, they were therefore known and described for the first time. It is easy now to give them names, and talk of them as species that had always been familiarly known, but such was not the case previous to 1814 ; and if, after all, I am still not to be considered as having discovered one of these species, I still must insist that I possess the humble honour of restoring them to their specific rank, though this in ornithological heraldry be decided to be only a civic (Burgomaster) one. It is yet, however, to be proved whether the names Burgomaster and Wagel were not by many writers applied indiscriminately to the young of all the larger Gulls ; thus committing the double error of exalting a young bird of a known species into a new species, and of confounding the young of the one species with that of another ; nor does it appear that other trivial names, such as Glaucus, &c., were more accurately or regularly applied. In the Ferroe Isles it is known by a similar name, Uislands Mauge, that is, Iceland Gull, as it is here. It is there, also, only a winter visitant. Why it has received this name from the inhabitants of these two groups I know not, for it does not occur very numerously, nor does it, I believe, breed in Iceland. In the high rocky cliffs in Davis' Straits it is found in great numbers, and the nest generally contains three young. They are, I think, easily domesticated, more so than any others of the large Gulls. The instinct that leads the Greater and Lesser Black-backed and Herring Gulls to constitute themselves, *pro tempore*, the coast-guard against sportsmen, I have observed no traces of in them."

No one acquainted with Gulls can have any hesitation in according to Dr. Edmondston all the merit of having made us acquainted with these two species ; nor can it, on the other hand, be denied that one of them, the larger, was well described before his first paper on it made its appearance. The smaller species he may lay claim to, but even it has also been distinguished by one who has taken precedence. The comparative terms Greater and Lesser, applied to Wood-

peckers, Tits, Terns, and Gulls, ought to be applied only so long as there are none larger or smaller. Neither of the two Gulls in question can with propriety be named Icelandic, they being more common elsewhere than in Iceland, where they never breed. But they might both be named White-winged, the smaller, however, having the better title to that designation ; and, if so, the one would be the Larger White-winged Gull, the other the Smaller. But he who named the former *Larus glaucus* gave it a not inappropriate name ; and he who named the latter *Larus leucopterus* cannot very reasonably be censured. The birds having been so named before Dr. Edmondston described them, ought to continue so, unless the names were false, or much more appropriate names could be applied. I should prefer *glacialis* and *arcticus*, which are correct, and in all respects unobjectionable ; but must yield to the general opinion.

LARUS CANUS. THE GREEN-BILLED GULL.

COMMON GULL. SEA MAW, MEW, or MALL.

Larus canus. Linn. Syst. Nat. I. 224. Adult.

Larus canus. Lath. Ind. Ornith. II. 815. Adult.

Common Gull. Mont. Ornith. Dict. and Suppl.

Mouette a pieds bleus. Larus canus. Temm. Man. d'Ornith. II. 771.

Common Gull. Larus canus. Selb. Illustr. II. 490.

Larus canus. Common Gull. Jen. Brit. Vert. Anim. 275.

Larus canus. Bonap. Comp. List, 63.

Bill an inch and a half along the ridge, which is gently decurved toward the end; five-twelfths high at the angle, which is little prominent; tarsus two inches long; wings surpassing the tail by two inches. Adult in winter with the bill greyish-green, shaded into ochre-yellow at the end; margins of eyelids brown; feet deep greenish-grey; back and wings light bluish-grey, the quills largely tipped with white, the outer five in part black, two of them with a large white spot toward the end; the head and hind-neck white, with brownish-grey streaks and spots; all the other parts pure white. In summer, the bill greenish-yellow; margins of eyelids vermilion; the head and neck pure white; the other parts as in winter. Young with the bill brownish-black, flesh-coloured at the base; edges of eyelids dusky; feet purplish-flesh-colour; head and neck greyish-white, streaked with greyish-brown; lower parts white, spotted with brown; upper parts variegated with greyish-brown and brownish-white, the feathers being margined with the latter; the quills brownish-black; the tail white, with a broad band of black at the end.

MALE IN WINTER.—This very common, lively, and beautiful species, although much inferior in size to *Larus argentatus*, is nearly allied to it in form and colouring. It is

rather slender than stout, with the neck of moderate length, the head rather large, ovate, and anteriorly narrowed.

The bill is considerably shorter than the head, moderately stout, compressed, rather higher at the angle than at the base; the upper mandible with the dorsal line straight for half its length, then arcuato-declinate, the ridge convex, the edges direct, very thin, nearly straight, arched toward the end, the tip rather acute; the lower mandible with the angle long and narrow, the prominence small, the dorsal line ascending and slightly concave, the sides nearly erect and a little convex, the edges somewhat inflexed, very thin, a little decurved toward the point, which is very narrow.

Mouth ten-twelfths in width; palate with two very prominent papillate ridges, and intervening reversed papillæ, its anterior part with a medial papillate ridge and two lateral elevated lines. Tongue an inch and a half long, emarginate and finely papillate at the base, narrow, trigonal, tapering to a slender slit point. The œsophagus is nine inches long, an inch and a quarter in width, contracting to one inch, and again enlarging to an inch and five-twelfths. The belt of proventricular glandules is eleven-twelfths. The stomach, although small, being only one inch in external diameter, is a true gizzard, having the lateral muscles strong, the tendons large, the epithelium dense and prominently rugous. The intestine is three feet three inches in length, from four-twelfths to two-and-a-half-twelfths in width; the cœca seven-twelfths long, two-twelfths in breadth; the length of the rectum three inches; the cloaca globular.

The nostrils are linear-oblong, four-and-a-half-twelfths long; the eyes rather small. The feet are rather short and slender; the tibia bare for half an inch; the tarsus compressed, with twenty-six narrow, curved scutella. The hind toe is very small, with two scutella; on the second toe are about twenty, on the third thirty-six, on the fourth thirty-four. The interdigital membranes are emarginate, the soles flattened, and the margins thick and prominent. The claws are small, compressed, arched, rather blunt, that of the third toe much curved outwards, with its inner margin moderately expanded.

The plumage is full, soft, and elastic, generally blended, on the back and wings rather compact. The wings are very long, rather narrow, pointed, and exceed the tail by about two inches; the primaries very long, tapering, and rounded; the secondaries twenty, a little incurved, rather narrowly rounded. The tail is almost even, the middle feathers exceeding the lateral by only a quarter of an inch.

The bill is of a uniform greyish-green tint, shaded at the end with ochre-yellow; the basal margins and mouth orange; the edges of the eyelids dull reddish; the iris brown. The feet deep greenish-grey; the claws black. The head, neck, lower parts, rump, and tail, are white; but the upper part of the head, the cheeks, the hind part, sides, and lower part of the neck, are marked with oblong or roundish spots of dark brownish-grey. On the outer five quills is a band of greyish-black, largest on the outer, gradually diminishing, and on the fifth reduced to a broad band near the tip. The first quill is white at the end for nearly three inches, with a black spot on the inner web at the end; the second has a white space of an inch and a half, with a band of black, and the tip white; on the third is a white spot near the end; the tips of all the quills white, that colour more extended on the secondaries. There is a semicircle of blackish-bristly feathers before the eye. The back and wings are light greyish-blue; the shafts of the primaries of the colour of the webs, the outer two being black nearly in their whole length.

Length to end of tail 18 inches; extent of wings 36; wing from flexure $14\frac{3}{4}$; tail $5\frac{1}{2}$; bill along the ridge $1\frac{7}{12}$; along the edge of lower mandible 2; tarsus 2; first toe $\frac{2}{12}$, its claw $\frac{2}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{1}{2}$, its claw $\frac{4}{12}$; fourth toe $1\frac{5}{12}$, its claw $\frac{2}{12}$.

FEMALE IN WINTER.—Similar to the male, but somewhat smaller.

VARIATIONS.—Considerable differences are observed as to size, the thickness of the bill, and the length of the tarsus. Variations also occur in the markings of the outer primaries, just as in *Larus argentatus*.

MALE IN WINTER.—The bill is greenish-yellow, purer toward the end; the margins of the eyelids vermilion. The plumage is coloured as in winter, the only difference being that the spots on the head and neck have disappeared.

FEMALE IN SUMMER.—Similar to the male.

HABITS.—The fields having been cleared of their produce, and partially ploughed, to prepare them for another crop, the “Sea Maws,” deserting the coasts, appear in large flocks, which find subsistence in picking up the worms and larvæ that have been exposed. These flocks may be met with here and there at long intervals in all the agricultural districts, not only in the neighbourhood of the sea, but in the parts most remote from it. Although they are more numerous in stormy weather it is not the tempest alone that induces them to advance inland; for in the finest days of winter and spring they attend upon the plough, or search the grass fields as assiduously as at any other time. Frequently they have no companions of other species, but often they mingle with Tar-rocks, and sometimes with Herring Gulls. Should the country become covered with snow they retreat to the shores; but when the thaws have partially exposed the ground they return. At this season they almost entirely desert the more northern sterile parts of Scotland, advance southward, and are dispersed over the whole country. At length, in the end of April they disappear from the interior, and betake themselves to their breeding places.

In the Shetland and Orkney Islands, in the Outer Hebrides, on the northern and western coasts of Scotland, here and there in the rocky places along its eastern shores, and much more rarely on the western coasts of England and Wales, they are then to be found, often congregated in vast numbers, but also dispersed in pairs. The lower parts of craggy cliffs, rocky peninsulas, and small unfrequented islands, are their favourite stations. I have often, however, found their nests on the turf, along with those of the Herring Gulls. They are composed generally of fuci, occasionally of grass, bits of turf, and other vegetable substances. The eggs,

usually three, sometimes two, are of a broadly ovate form, olive-brown, yellowish-brown, oil-green, greenish-grey, or greenish-white, irregularly dotted and spotted with dark-brown and purplish-grey, the markings generally larger and more numerous on those which have the ground-colour deepest. They vary in length from two inches and one-twelfth to two-twelfths more, and have an average breadth of an inch and a half.

This species has a light buoyant flight, during which it often inclines to either side. It walks and runs prettily with short steps, pats the sands at the edge of the water with its feet, emits a shrill somewhat harsh cry, and is apt to give the alarm to other birds at the approach of the sportsman. It is not however nearly so timid, or at least so sensible of danger, as the larger Gulls, and either in the fields or on the sea-shore, often allows a person to come within shot. Often also, when one has been killed or wounded, its companions, after flying off, collect again, hover around, or even alight, when some of them may often be obtained. When feeding along with Rooks, in pasture ground, they are often found to be less wary than these birds, especially in places where they are not much liable to be molested. They never, I think, molest any other bird, nor are they at all addicted to quarrelling among themselves. Their food consists of small fishes, such as sand-eels and young herrings, which they pick from the water, first hovering with extended and elevated wings, then descending, spreading their tail, and letting down their feet, with which I have often seen them pat the water, as if they were running on land. They never plunge so as to be immersed, but merely seize on what comes close to the surface. They also feed upon stranded fishes of large size, *asteriæ*, *molusca*, shrimps, and other small crustacea. Sometimes also they pick up grain in the fields, and in a state of domestication may be partly fed on bread. They are easily tamed; but unless in a garden, or where they are not liable to be teased, they are seldom found to live long in this condition.

YOUNG.—The young, at first covered with down, of a light grey colour, spotted with brown and black, remain in

the nest until able to fly, unless it happens to be in a place where they can run, and then they will readily leave it on being alarmed. When fledged, they are as follows :—

The bill is black, at the base livid flesh-colour ; the iris dusky ; the edges of the eyelids brown ; the feet flesh-colour, tinged with yellow. The upper parts are greyish-brown, variegated with brownish-white, the feathers being margined with the latter colour. The primary quills are blackish-brown, narrowly tipped with paler ; the secondaries brown toward the end, light grey at the base. The tail is white for two-thirds, the remaining part brownish-black, the tips narrowly edged with white ; the upper tail-coverts white, with a brown spot toward the end. The forehead is white, anterior to the eyes is a semicircular band of black ; the cheeks streaked with brown ; all the lower parts pure white ; the neck and breast marked with roundish or transverse small spots of light brownish-grey ; the sides with large markings ; the axillaries irregularly barred toward the end ; the lower wing-coverts and the small feathers on the edge of the wing brown toward the end ; the abdomen pure white ; the lower tail-coverts with a brown spot toward the end.

FIRST WINTER.—After the first moult, which is completed in November, the bill has its dark-coloured part less extended, and the feet are of a more yellow tint. The head and hind-neck are white, streaked with brownish-grey ; the back is greyish-blue, but with a mixture of brown feathers ; a large portion of the inner primaries has become grey ; the secondary coverts are dull bluish-grey, brown toward the end ; the rump and upper tail-coverts nearly white, the spots being very small ; and all the lower parts are much whiter. The colours remain in this state during the summer, merely fading from the action of the weather.

SECOND WINTER.—Bill yellowish-green, with the end dusky ; feet livid yellowish-green. Head and neck pure white, the former with short streaks, the latter with round or transverse spots, as in the adult ; all the lower parts white, but the sides, part of the breast, the axillaries, and lower

coverts of the wings and tail faintly marked with brownish-grey; the fore part of the back and the scapulars pure greyish-blue; the wing-coverts tinged with brown; the quills nearly as in the adult, but the outer primaries still without white at the end; the upper tail-coverts pure white, and the dark band on the tail reduced to the breadth of an inch and a quarter on the middle feathers, and much less on the lateral.

THIRD YEAR.—In summer, the plumage is as described in the adult at that season.

REMARKS.—This species is nearly allied to *Larus zonorhynchus*, an American bird not hitherto observed in Europe, and which has often been confounded with it. As our *Larus canus* is vulgarly named the Common Gull, and as the American *Larus zonorhynchus* bears the same name of Common Gull, one or other of these vernacular names must yield in correct nomenclature. Is it not much better at once to call the European bird the Green-billed, and the American the Barred-billed? Any name is better than “Common” for any bird.

The species now described, namely, *Larus marinus*, *L. glaucus*, *L. argentatus*, *L. leucopterus*, *L. flavipes*, and *L. canus*, all clearly belong to one and the same group. Although they do not differ very much from the other British Gulls, they yet differ fully as obviously as the acknowledged genera of the *Sylviinæ*, *Passerinæ*, *Picinæ*, *Turdinæ*, and many others differ from each other. If we proceed upon the principle of minute subdivision, we must, to be consistent, separate the Gulls into several genera, as well as the Snipes, or Plovers, which differ as little from each other as they do.

GAVIA. MEW.

THE Sea-Mews, or smaller Gulls, differ from the birds of the last genus in being inferior in size, of a more slender form, and especially in having the bill and feet comparatively feeble.

Bill rather long or of moderate length, slender, much compressed, slightly decurved at the end, acute; upper mandible with the dorsal line straight for half its length, then slightly arcuato-declinate, the ridge convex at the base, narrow beyond the nostrils; the lateral sinus rather long, narrow, and feathered; the nostrils sub-basal, long, linear, a little wider anteriorly, margined above with a sloping thin-edged membrane, the branches narrow and convex, the edges very thin, inclinate, the sides beyond the nostrils nearly erect and flattened, the tip narrow, rather acute, very slightly prolonged, and with a faint sinus on the margins; lower mandible very much compressed, with the intercrural space very long and extremely narrow, the crura erect, convex, their lower outline a little concave anteriorly, forming at the commissure a slight angle with the dorsal line, which is nearly straight, the edges very thin and inflected, the tip rather acute; the gape-line commencing beneath the eyes, straight, slightly arcuato-declinate at the end.

Mouth of moderate width; palate flat, with two very prominent papillate ridges and intervening papillæ, anteriorly with five ridges; posterior nasal aperture linear. Tongue emarginate and minutely papillate at the base, fleshy, slender, tapering, horny beneath. Œsophagus very wide throughout, its walls extremely thin; proventricular portion wide, with a continuous narrow belt of very small, oblong glandules, and traversed by very prominent rugæ, continuous with those of the stomach, which is rather small,

oblong, with the lateral muscles rather thick, the tendons large, the epithelium thick, horny, and having very prominent longitudinal rugæ, its upper margin abrupt. Intestine of moderate length and very narrow; cæca extremely small, cylindrical; rectum short, with a large globular dilatation.

Eyes rather small; eyelids feathered, with bare, crenulate margins. Aperture of ear of moderate size, roundish. Legs of moderate length, rather slender; tibia bare for one-third; tarsus rather short, compressed, anteriorly covered with numerous curved scutella, laterally with angular scales, behind with numerous small rectangular scales. Hind toe very small and elevated; fore toes of moderate length, slender, the fourth a little shorter than the third, and about a fifth longer than the second, all with numerous scutella, and connected by reticulated membranes, of which the anterior edge is concave; the lateral toes margined externally by a thick scaly membrane, the soles flat and granulated. Claws small, slightly arched, compressed, rather acute, that of the middle toe with an expanded thin inner margin.

Plumage full, close, soft, and blended; on the back and wings rather compact. Feathers generally oblong or elliptical and rounded, on the fore part of the head short. Wings very long, rather narrow, pointed, with thirty quills; the primaries nearly straight, tapering, obtuse, the first and second longest, the rest rapidly graduated, the secondaries broad and rounded. Tail of moderate length, even or emarginate, of twelve broad, abruptly rounded feathers.

The Sea-Mews are of moderate or small size, in form differing little from the Gulls, but more slender. The bill especially differs in being almost always slender, much compressed, pointed, sometimes smaller than in the genus *Sterna*. They swim with considerable celerity; sit very lightly on the water; have a very light, buoyant, wavering, flight, performed by rather quick beats of their long extended, arched wings; walk quickly and run with ease. Being incapable of diving, they pick up their food from the water, dipping for it, but seldom so as to immerse more than the head. It consists chiefly of small fishes; but they also eat crustacea, mollusca, asteriæ, larvæ, worms, and insects.

Their cries are loud, shrill, and harsh ; and they have also a laughter-like cry. Much more active than the Gulls, they perform their aerial evolutions with great celerity. Species are found on all the maritime coasts ; but in the cold season they desert the frozen regions. They are all gregarious, feeding and breeding in society, some forming their nests on the sea-shore, in rocky or grassy places, others on inland marshes or in islands of lakes. They are composed of dry grass or sea-weeds, and generally contain three eggs, which are broadly ovate, olivaceous, brown, or grey, dotted or blotched with dark brown and grey. The young, at first covered with parti-coloured down, leave the nest if molested, and conceal themselves by squatting. The plumage, at first mottled with brown, becomes lighter at the first moult, and in two years or less is perfected. The prevailing colours are white and light greyish-blue, with black on the wings. In winter the head is light-coloured ; but in summer generally deep grey, brown, or black.

This genus is directly connected with *Larus* on the one hand, and with *Sterna* on the other. Several of the species, the Fork-tailed at least, have been generically named *Xema* ; but as that name appears to be mere “ nonsense,” it having no etymology, it ought to be treated as such. The genus itself so called is not the genus above defined, most of the species of which are included in Brisson’s genus *Gavia*, which name I therefore adopt, though it also is not classical.

GAVIA ATRICILLA. THE LEADEN-GREY- HOODED MEW.

LAUGHING GULL. BLACK-HEADED GULL.



FIG. 96.

Larus Atricilla. Linn. Syst. Nat. I. 225.

Larus Atricilla. Lath. Ind. Orn. II. 813.

Larus Atricilla. Black-headed or Laughing Gull. Audub. Orn. Biogr. III. 118.

Laughing Gull. Mont. Orn. Dict.

Mouette a capuchon plombé. Larus ridibundus. Temm. Man. d'Orn. II. 780.

Larus Atricilla. Laughing Gull. Jen. Brit. Vert. Anim. 273.

Xema Atricilla. Bonap. Comp. List, 62.

Bill an inch and three-fourths in length; tarsus nearly two inches; wings three inches longer than the tail; bill and feet rich carmine; outer quill black, the next five with that colour gradually diminishing, the tips white, those of the outer two excepted. In winter, the back and wings light bluish-grey; the other parts white; the head faintly marked with brownish-

grey; a black crescent before the eye, and a grey patch behind it. In summer, the colour similar, but the head and part of the neck blackish leaden-grey, the lower parts tinged with rose-colour. Young with the bill and feet olive-brown; the upper parts brownish-grey, variegated with paler; the first four quills without white at the end; the tail pale greyish-blue, with a broad band of brownish-black at the end, and narrowly tipped with white; lower parts greyish-white, the neck brownish-grey, axillars ash-grey.

MALE IN WINTER.—The proper country of this species is North America, and the following description is taken from specimens procured there, the instances of its occurrence in Britain being extremely few. It is a little larger than our common *Gavia ridibunda*, and precisely of the same form, having the body compact, the neck of ordinary length, the head broadly ovate, much narrowed anteriorly.

The bill is rather shorter than the head, moderately stout, compressed, slightly arcuate, pointed; the upper mandible with the dorsal line moderately decurved beyond the nostrils, which are linear-oblong, the tip narrow, rather obtuse, with a slight sinus on the margins; the lower mandible with the angular prominence rather conspicuous, the dorsal line ascending and slightly concave, the sides erect and nearly flat.

The mouth is of moderate width; the tongue slender, trigonal, pointed, an inch and a quarter in length. The œsophagus is six inches and a half in length, generally an inch in width, within the thorax dilated to an inch and a half; the proventricular belt seven-twelfths in breadth. The stomach is oblong, an inch and a half in length, ten-twelfths in breadth, with rather strong muscles, radiated tendons, and dense, longitudinally rugous epithelium. The intestine is twenty-two inches long, from four-twelfths to two-twelfths in width; the cœca three-twelfths long, and only half a twelfth in breadth; the rectum an inch and a half long, the cloaca globular, an inch in width.

The feet are of moderate length, rather slender; the tibia bare for three-fourths of an inch; the tarsus compressed,

with numerous anterior scutella ; the interdigital membranes emarginate. The claws are small, slightly arched, compressed, pointed, the inner edge of that of the third toe considerably expanded.

The plumage is full, soft, and blended, unless on the back and wings, where the feathers are somewhat firm. The wings are very long and pointed, and extend two inches beyond the tail, which is even. The first quill is longest, the second slightly shorter, the rest rapidly diminishing ; the outer secondaries incurvate and obliquely rounded.

The bill, inside of the mouth, edges of the eyelids, and the feet, are of a deep carmine tint, the claws brownish-black ; the iris bluish-black. The head, neck, lower parts, and tail white ; the head faintly mottled with brownish-grey ; a dusky crescent before the eye, and a patch over the ear. The back and wings are light bluish-grey ; the margin of the wings, and a large terminal portion of the secondaries white. The first primary is black, with the basal part of the inner web tinged with grey ; the second and third also black, with the grey more extended ; the fourth having two-thirds occupied by it ; the fifth with a large subterminal black band, and the sixth with a slight mark ; the tips of all white, except the outermost ; the other primaries like the back, as are the secondaries, of which the tips are white.

Length to end of tail 18 inches ; extent of wings 40 ; wing from flexure $13\frac{1}{4}$; tail 5 ; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $2\frac{1}{4}$; tarsus $1\frac{1}{2}$; hind toe $\frac{3}{12}$, its claw $\frac{1}{12}$; second toe 1, its claw $\frac{4}{12}$; third toe $1\frac{4}{12}$, its claw $\frac{5}{12}$; fourth toe $1\frac{3}{12}$, its claw $\frac{3}{12}$.

FEMALE IN WINTER.—The female resembles the male in colour, but is considerably smaller.

Length $16\frac{1}{2}$ inches ; wing from flexure $12\frac{3}{4}$; tail 5 ; bill along the ridge $1\frac{9}{12}$; tarsus $1\frac{1}{12}$; third toe and claw $1\frac{9}{12}$.

VARIATIONS.—As in other species of this and the preceding genus, the dark markings on the wings vary ; but I have never seen a bird with all the primaries black and destitute

of white on their tips, as they are represented by M. Temminck.

MALE IN SUMMER.—The bill and feet of a brighter tint. The colours of the plumage as in winter ; but the lower parts tinged with rose-colour, and the head, with a portion of the neck all round, deep leaden-grey, darker on the upper part of the head and along the posterior margin, which descends lower anteriorly, or to the extent of two inches and a half from the base of the lower mandible ; on each of the eyelids is a narrow white streak.

FEMALE IN SUMMER.—Similar to the male.

HABITS.—This species, which properly belongs to America, was made known as a visitor to the shores of England by Montagu, who, in his Ornithological Dictionary, has the following statement :—“ In the month of August, 1774, we saw five of them together feeding in a pool upon the Shingly Flats, near Winchelsea ; two only were black on the head, the others were mottled all over with brown. One of them was shot ; but although the remaining four continued to resort to the same place for some time, the old ones were too shy to be procured. We also saw two others near Hastings, in Sussex. They may easily be known from the Black-headed Gull even flying ; the flight is different ; the bird appears much larger, and the tail shorter in proportion.” The specimen obtained is preserved in the British Museum. It does not appear that any other has been obtained in Britain.

Part of a very extended account of this bird, given by Mr. Audubon, is as follows :—“ The Black-headed Gull may be said to be a constant resident along the southern coast of the United States, from South Carolina to the Sabine River ; and I have found it abundant over all that extent, both in winter and in summer, but more especially on the shores and keys of the Floridas, where I found it breeding, as well as on some islands in the Bay of Galveston, in Texas. A very great number of these birds, however, remove, at the

approach of spring, towards the middle and eastern districts, along the shores of which they breed in considerable numbers, particularly on those of New Jersey and Long Island, as well as on several islands in the Sound. They constantly evince a dislike to rocky shores, and therefore are seldom seen beyond Massachusetts, in which state, indeed, they are exceedingly rare.

“At all periods of the year, the Black-headed Gulls keep in flocks formed of many families; and in the breeding season, or even as soon as their courtships have commenced, they assemble by hundreds of pairs, or even by thousands. At this time they are so clamorous as to stun your ear with their laughing-like cries, though at other seasons they are generally silent, unless when suddenly alarmed or when chased by the Jager. Their loves are conducted with extreme pomposity: they strut and bow to the female, throwing their head backwards, like all other Gulls. You see them first stretching their heads forwards; then with open bill, vibrating tongue, and eyes all glowing, they emit their loud laughing notes, which, in a general sense, resemble those of many other species, though they are not precisely similar to those of any.

“Whilst at Great Egg Harbour, in May 1829, shortly after my return from England, I found this species breeding in great numbers on the margins of a vast salt marsh, bordering the sea-shore, though separated from the Atlantic by a long and narrow island. About sunrise every morning, an immense number of these birds would rise in the air, as if by common consent, and wing their way across the land, probably intent on reaching the lower shores of the Delaware River, or indeed farther towards the head waters of Chesapeake Bay. They formed themselves into long straggling lines, following each other singly, at the distance of a few yards. About an hour before sunset, the same birds were seen returning in an extended front, now all silent, although in the morning their cries were incessant, and lasted until they were out of sight. On arriving at the breeding-ground, they immediately settled upon their nests. On a few occasions, when it rained and blew hard, the

numbers that left the nests were comparatively few, and those, as I thought, mostly males. Instead of travelling high, as they are wont to do in fair and calm weather, they skimmed closely over the land, contending with the wind with surprising pertinacity, and successfully too. At such times they were also quite silent.

“ This species breeds, according to the latitude, from the 1st of March to the middle of June; and I have thought that, on the Tortuga Keys, it produced two broods each season. In New Jersey, and farther to the eastward, the nest resembles that of the Ring-billed Gull, *Larus zonorhynchus*, being formed of dried sea-weeds and land-plants, two and sometimes three inches high, with a regular rounded cavity, from four and a half to five inches in diameter, and an inch and a half in depth. This cavity is formed of finer grasses, placed in a pretty regular circular form. I once found a nest formed as it were of two; that is to say, two pairs had formed a nest of nearly double the ordinary size, and the two birds sat close to each other during rainy weather, but separately, each on its own three eggs. I observed that the males, as well as the females thus concerned in this new sort of partnership, evinced as much mutual fondness as if they were brothers. On the Tortugas, where these Gulls also breed in abundance, I found their eggs deposited in slight hollows scooped in the sand. Whilst at Galveston, in Texas, I found their nests somewhat less bulky than in the Jerseys, which proved to me how much birds are guided in these matters by differences in atmospheric temperature and locality.

“ I never found more than three eggs in a nest. Their average length is two inches and half-an-eighth, their greatest breadth a trifle more than an inch and a half. They vary somewhat in their general tint, but are usually of a light earthy olive, blotched and spotted with dull reddish-brown and some black, the markings rather more abundant towards the larger end. As an article of food they are excellent. These Gulls are extremely anxious about their eggs as well as their young, which are apt to wander away from the nest while yet quite small. They are able to fly at

the end of six weeks, and soon after this are abandoned by their parents, when the old and young birds keep apart in flocks until the following spring, when, I think, the latter nearly attain the plumage of their parents, though they are still smaller, and have the terminal band on the tail."

YOUNG.—When fledged, the young have the bill, inside of the mouth, edges of the eyelids, and feet, olive-brown. The upper parts are brownish-grey, variegated with paler, the margins of the feathers being brownish-white; the hind part of the back light bluish-grey; the upper tail-coverts nearly white. The primaries are brownish-black, the outer four without white at the tip. The tail is pale greyish-blue, with a broad band of brownish-black at the end; the feathers narrowly tipped with brownish-white. The lower parts are greyish-white; the lower part of the neck brownish-grey; the axillars ash-grey; the lower wing-coverts dusky-grey.

REMARKS.—M. Temminck describes his *Larus Attricilla* as having "toutes remiges noire," and "pennes secondaries de couleur de plomb; extremite des pennes secondaries blanches; toutes les remiges sont d'un noir profond, sans aucun pointe blanche." Again, in his supplementary fourth volume, he says that in a specimen in its first adult winter plumage, the primaries (remiges) are "noires, terminees par une pointe blanche;" but that old birds, whether in summer or in winter, have no longer any indication of white spots at the end of the quills, they being of a perfect black, with the base slate-colour. He further observes that, notwithstanding the remarks made by Meyer and others, as to his *Larus Attricilla* not being that of Catesby and Brisson, he can positively assert that it is the same Gull. Now, Brisson describes his *Gavia ridibunda*, the *Attricilla* of Linnæus, and the Laughing Gull of Catesby, as having not all the ten primaries black, but the outer three black, but grey at the base, the next three grey at their origin and black toward the end, the latter colour gradually occupying less space the nearer the feather is to the body, and the six being moreover tipped with white. Loose descriptions, in species so nearly allied, and so difficult

to characterize as the Dark-headed Mews, are of necessity liable to lead into error. The normal state of the six outer quills is to have white tips, except the outer two, or sometimes three, but as these tips are small, they are liable to be soon partially or entirely obliterated by the abrasion of their points.

GAVIA RIDIBUNDA. THE BROWN-HOODED MEW.

LAUGHING GULL. BLACK-HEADED GULL. BLACK-CAP GULL. BLACK CAP. HOODED MAW. RED-LEGGED GULL. PEWIT GULL. MIRE CROW. SEA CROW. PICKMIRE. PICTARN.

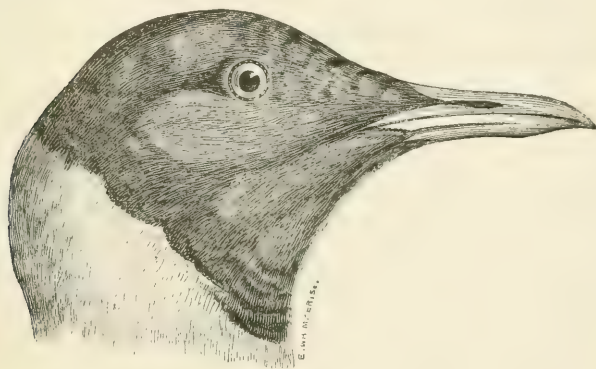


FIG. 97.

- Larus ridibundus. Linn. Syst. Nat. I. 225. Adult in summer.
 Larus cinerarius. Linn. Syst. Nat. I. 224. Adult in winter.
 Larus ridibundus. Lath. Ind. Orn. II. 811.
 Black-headed Gull. Mont. Orn. Dict.
 Mouette rieuse ou a capuchon brun. Larus ridibundus. Temm. Man. d'Ornith. II. 780.
 Black-headed Gull. Larus ridibundus. Selb. Illustr. II. 486.
 Larus ridibundus. Black-headed Gull. Jen. Brit. Vert. An. 273.
 Xema ridibundum. Bonap. Comp. List, 62.

Bill an inch and a third in length ; tarsus an inch and three-fourths ; wings two inches and a half longer than the tail ; bill and feet rich carmine ; outer four quills and their coverts white, the first with the greater part of its outer margin, the tip, and a narrow band along its inner edge, black ; on the next five no black on the outer web, that on the tip

more extended, the black band on the inner edge broader ; the tips white, those of the outer two excepted. In winter, the back and wings light bluish-grey ; the other parts white ; the head faintly marked with grey ; a black crescent before the eye, and a blackish-grey patch behind it. In summer, the colours similar, but the head and throat deep brown, becoming brownish-black behind, the lower parts slightly tinged with rose-colour. Young with the bill flesh-coloured or pale brown, toward the end blackish-brown ; feet brownish flesh-colour ; the head and nape pale brown ; ear-coverts white ; back and smaller wing-coverts brown, the feathers edged with paler ; hind part of back and tail white, the latter with a broad terminal bar of dark-brown ; quills with their outer webs black, the inner white ; lower parts greyish-white.

MALE IN WINTER.—This species, the common “Black-headed Gull,” which is generally dispersed in Britain, and permanently resident there, is very similar to the last in colour, and of the same form, but somewhat smaller, with the bill and tarsi considerably shorter, and the “mask” deep brown instead of leaden-blue. The body is compact, rather slender, the neck of moderate length, the head broadly ovate, much narrowed anteriorly.

The bill is rather shorter than the head, slender, much compressed, nearly straight, and pointed ; the upper mandible with the dorsal line moderately decurved beyond the nostrils, which are linear-oblong, four-and-a-half-twelfths long, the tip acute, with a very slight sinus on the margins ; the lower mandible with the angular prominence very slight, the dorsal line slightly ascending and somewhat concave, the sides erect, considerably convex toward the base, the tip acute.

The aperture of the eye is three-twelfths in diameter ; that of the ear four-twelfths. The feet are of moderate length, and slender ; the tibia bare for three-fourths of an inch ; the tarsus much compressed, with eighteen scutella ; the hind toe very small and elevated, with a minute, straight, bluntish claw, its scutella three ; the second with twenty, the third thirty-two, the fourth thirty scutella ; the fourth a little shorter than the third, the webs emarginate, the lateral toes

with thick margins, the soles flat. The toes small, compressed, deeply grooved at the base, rather acute.

Plumage full, soft, blended, on the back and wings rather compact. Wings about two inches and a half longer than the tail; the primaries tapering to an obtuse point; the secondaries twenty-two, the outer incurved. The tail of moderate length, even.

The bill, edges of the eyelids, and feet, are deep carmine; the inside of the mouth of a lighter tint; the iris brown; the claws brownish-black. The head, neck, lower parts, edge of the wing, outer four primary coverts, upper tail-coverts, and tail, are pure white. The feathers of the upper part of the head, however, are dark-grey, unless at the tip, and that colour appears on the crown and occiput; before the eyes is a crescent of black, and over the ear a blackish-grey spot. The first quill is white, with a large portion of the outer web and its tip deep black, and a narrow band along the margin of the inner web of a lighter tint, or brownish-black; the second white, with the tip black, and its inner margin to a greater breadth brownish-black; the third with part of the outer web, near the end, the tip, and a broader band along its inner margin, black, with a slight mark of white on the tip; the fourth similar, with a band of greyish-blue within the black band on the inner web; the fifth like the fourth, with a tinge of blue on the outer web, and the whole of the inner web greyish-blue, unless toward the margin, which is black; the next bluish-grey, with a black band at the end; the third, fourth, fifth, and sixth quills tipped with white; all the other quills like the back, the inner four primaries and outer five or six secondaries not tipped with white, but the rest having a considerable terminal space of that colour. The axillar feathers are pure white, as are the smaller lower wing-coverts next the edge of the wing; but all the other coverts are pale greyish-blue. On the lower surface the primaries have the parts which are black above of a blackish-grey colour, and the inner four also have their inner webs so tinged, although they are light bluish-grey above. The secondaries are of a silvery-grey tint, with a satiny lustre beneath; the lower surface of the tail-feathers is also satiny, though white.

Length to end of tail 16 inches ; extent of wings 38 ; wing from flexure $17\frac{1}{2}$; tail 5 ; bill along the ridge $1\frac{4}{12}$; along the edge of lower mandible 2 ; tarsus $1\frac{8}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{1}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{4}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{1}{4}$, its claw $\frac{2}{12}$.

FEMALE IN SUMMER.—The female is smaller, but in colour the same.

Length 15 inches ; extent of wings 37 ; bill $1\frac{3}{12}$; tarsus $1\frac{7}{12}$; third toe $1\frac{3}{12}$, its claw $\frac{4}{12}$.

VARIATIONS.—There are considerable differences in size ; the tarsus, in particular, varies from an inch and seven-twelfths to an inch and nine-and-a-half-twelfths. The grey tint on the head varies in depth and extent, as does the black on the outer quills.

MALE IN SUMMER.—The bill and feet are of a brighter tint. The colours of the plumage as in winter ; but the lower parts faintly, sometimes strongly tinged with rose-colour, and the head of a sooty-brown, lighter anteriorly, but becoming brownish-black behind ; the space thus coloured ending on the occiput, but on the fore-neck extending to two inches and a half from the base of the lower mandible. Both eyelids have a band of white feathers, unless at their fore part.

FEMALE IN SUMMER.—Similar to the male.

HABITS.—The Brown-hooded Mew, commonly but erroneously named the Black-headed Gull, is generally dispersed along the shores, but is found congregated more especially in estuaries, and near the mouths of rivers, during the cold season. Its food then consists of small fishes, which it picks up from the surface of the water, as well as of crustacea, asteriæ, and marine worms, which it finds on the shores. Frequently, however, it makes excursions inland to search the pastures and ploughed fields for worms and larvæ, especially during stormy weather. Both then and at other times it mingles with Gulls, and is frequently seen in com-

pany with Rooks. Flocks often select an open field or plain as a resting station, reposing there at night and during part of the day, and flying off to feed in the surrounding fields, or on the shores of the sea. When shoals of young herrings or other fishes appear on the coast, they congregate in vast numbers, along with Gulls of various species, and continue to feed upon them so long as they remain. A very remarkable scene of this kind occurred in the Firth of Forth, in the winter of 1837.

On the 27th December, accompanied by my son, I crossed by the ferry-boat from Trinity to Kirkaldy. The water was exceedingly smooth, for although fleecy clouds drifted rapidly eastward, it was calm below, and the sun emerging from the clouds gave promise of a fine day. At first no birds were to be seen, excepting one or two wandering Gulls which hovered and wheeled in silence over the water; but when we had proceeded about a mile, small parties of Tarrocks, *Larus ridibundus*, advanced screaming, and now and then dipping in pursuit of their prey. Farther on, numerous little bands of Guillemots and Auks, *Uria Troile* and *Alca Torda*, were seen flying up the Firth, or floating on the water. These birds, which are precisely similar in their manners, and differ very little in appearance, float lightly, with erect necks, dive with rapidity, partially opening their wings as they plunge headlong into the water, and fly in strings, at the height of two or three feet from the surface, with a direct and rapid motion, simultaneously inclining themselves alternately to either side. Six large Cormorants, *Phalacrocorax Carbo*, with sedately-flapping wings and long outstretched necks, presented an interesting sight as they flew past in a line, almost touching the smooth water. Small groups of Red-throated Divers, *Colymbus septentrionalis*, composed of from two to four or five individuals, now and then shoot past in rapid flight, and scarcely at a greater height than the Guillemots, although on many occasions I have seen them fly at a great elevation, especially in rough weather. A few Great Northern Divers, *Colymbus glacialis*, also made their appearance, flying precisely in the same manner as the Red-throated species, but with somewhat less rapid motions of the wings.

A single Great Black-backed Gull, *Larus marinus*, sailed quietly along at a considerable height, and now numerous groups of the "Black-headed Gulls," at this season of the year, however, unhooded, danced buoyantly and gaily at the distance of a few yards from the water, often wheeling, and occasionally stooping to pick up some small fish.

The tide was rising, and almost all the birds were advancing in the same direction, toward the entrance of the inner firth or estuary. Passing Kinghorn, and entering the Bay of Kirkcaldy, we found the number of Guillemots and Auks diminished, while the Gulls had disappeared; but here vast numbers of Velvet Ducks, *Oidemia fusca*, were dispersed over the waters in groups of from two to fifteen or twenty. In a flock that rose before us, however, I counted thirty-eight individuals. These birds, on account of their black colour and large size, have a remarkable appearance, which is rendered still more so when they are on wing, as then the white patch across that organ becomes exceedingly conspicuous. They swim lightly, and fly with moderate speed, at the height of three or four feet. In rising from the water, they ascend very gradually, striking it with their wings along a distance of two or three yards, and in alighting they settle as it were upon their hinder part, and then fall forward. Interspersed among them, in smaller numbers, were groups of the Black Duck, *Oidemia nigra*, a species very similar, but inferior in size, and destitute of white on the wing. It exhibited precisely the same modes of flying and swimming. A shot fired by a person on board at the Ducks started from a rock off Seafield Tower a large flock of Turnstones, *Streptilas collaris*, and from another in its vicinity a smaller flock of what seemed to be Dunlins, *Tringa alpina*. Finally, on approaching the harbour of Kirkcaldy, we saw a single beautiful Long-tailed Duck, *Anas glacialis*.

Having walked to Queensferry, we were pleased to hear in the dusk the Black-headed Gulls screaming out their peculiar cry of kree, kree, krek, at a distance. Next morning, on going to the pier, we saw vast numbers of Gulls congregated on the water in the eddies along the shore. At eleven o'clock we went on board the steamer from Newhaven

to Stirling. The weather had been dull in the morning, but just at this moment the sky cleared, and the sun shone out bright and dazzling to our eyes, accustomed to the gloom of the fog. The water was most beautifully smooth. The main current run landward, and with considerable rapidity, while the little bays showed a gentle eddy. All the way from Queensferry to Charleston, the whole surface of the Firth was sprinkled with Guillemots, Auks, Divers, and especially Gulls. The latter, however, were chiefly congregated, to an extent that one could hardly have conceived, along the northern shores, over the eddies of which they hovered in pursuit of the young herrings, or "Garvies," as they are here called, that had been stationary there for several weeks. The number seen at one glance along the shore, in a space of about two miles, could not be less than a hundred thousand; but the entire number in this part of the Firth probably did not fall short of at least a million. The different species were easily distinguishable. Possibly nine-tenths of the individuals belonged to the Brown-hooded kind, *Larus ridibundus*—a most inappropriate name by the by, as its cries bear no resemblance to laughter. The young birds of this species were comparatively few, and did not generally keep apart, though sometimes small groups of them might be seen. Of the remaining tenth, one-half belonged to the Common Gull, *Larus canus*, of which there seemed to be more young than old birds. The other half was composed of Herring Gulls, *Larus argentatus*, young and old, Smaller Black-backed Gulls, *Larus fuscus*, and Greater Black-backed Gulls, *Larus marinus*, the latter in very small numbers. Two Feasers were seen, both young birds, of a dusky colour, with the wings mottled with whitish, the tail even, and therefore probably *Lestris pomarinus*. They did not attack the Gulls, but fished for themselves, picking up the small herrings from on wing, which it was certainly much easier to do than to force the birds to disgorge them.

The cries of these Gulls are very different. *Larus ridibundus* has a harsh, softish, creaking cry, somewhat resembling the syllables kree, kree, kreek, kirreek; *Larus canus* emits a softer, modulated, and lengthened cry, somewhat

resembling the sounds of laughter; *Larus argentatus* has a louder chuckling cry, perhaps still more resembling laughter; *Larus marinus*, a strong, clear, loud barking or yelping note. The young of *Larus ridibundus* emit a shrill scream; those of *Larus canus* an undulated scream; and those of *Larus argentatus* a continuous louder scream.

The Guillemots, which were very numerous, but kept chiefly in the open part of the firth, sometimes rose as the vessel approached them, and ran, as it were, along the surface in a straight line, flapping their wings all the while, to the distance of a hundred yards or more, although most of them dived when we came near them. The Red-throated Divers, which, although similar in colour to the Guillemots, were easily distinguished by their superior size and the comparatively greater length of their necks, also frequently rose and splashed along to the distance of from two to four hundred paces. Although they fly with great speed when fairly on wing, they are heavy birds, and, in removing to a short distance, apparently do not think it necessary to rise into the air, as a Gull or Tern would do, but shoot out in a straight line, striking the water with their wings and feet, the latter, in particular, throwing it to a distance behind.

Above Charleston, the Gulls and Divers disappeared from the open water, and the flocks of the former seen along the bays were not more numerous than they would be in ordinary cases. At Bo'ness, on the southern side of the firth, not a single bird of any description was to be seen. Near Alloa, however, I observed a flock of *Larus fuscus* composed of thirty-eight individuals, and farther up many birds of the same species, with a few of *Larus canus*, *Larus argentatus*, and *Larus ridibundus*, were seen here and there, little bands of them floating in the bays. In the narrow part of the estuary, of which the flat margins are secured by low embankments, and sometimes fringed with very tall reeds, *Arundo phragmites*, a Heron, *Ardea cinerea*, a flock of Knots, *Tringa cinerea*, several Mallards, *Anas Boschas*, and three Red-breasted Mergansers, *Mergus Serrator*, were observed.

On the whole, few sights could be much more interesting

to a true field-and-flood ornithologist than that of the vast number of sea-birds then collected in the firth, and especially in the part above Queensferry, to which they were attracted by the great shoal of small herrings which had sought refuge there, and which were caught in great quantities by the fishermen, and sold in the neighbouring towns as an article of food.

In the beginning of January, 1841, during severe frost, hearing that many Gulls were in Leith Harbour, I went there to observe them, and counted two hundred and fifty of the present species, together with a very few individuals of *Larus canus*. The sea being smooth, they presented a beautiful sight as they swam in groups, each intent on the water into which it now and then dipped its bill, or hovered over it in search of food. But as nothing occurred beyond what I have already related, I was coming away, when I observed two Lesser Black-backed Gulls coming up. The Mews seemed uneasy on seeing them, and as they advanced most of them screamed and rose on wing. The Gulls flew among them, and chased them in the manner of the Lestres, but apparently with little success, as, although they flew faster, they could not turn so quickly; and the Mews, knowing their advantage, kept wheeling in small circles. Two more of these large Gulls now joined the rest, but presently gave up the chase. I had not before been aware of this habit in the Gulls, which are certainly less adapted for it than the Pirate-birds.

The flight of our Brown-headed Sea-Mew is very light, buoyant, and wavering, having a considerable resemblance to that of a Tern. It wheels, turns, ascends, and descends with great ease and dexterity; spreading out its tail and elevating its wings, it hovers over the water, which it seems to pat with its feet, as it meditates a descent upon its scaly prey. Even when solitary, it emits a creaking cry at intervals; but when multitudes are assembled, it becomes clamorous, their cries filling the air around. It rests on the waters, unless in rough weather, but often also on the shores; walks and runs gradually with very short steps; pats the sand with its feet; lives on friendly terms with

those of its own species, and is not molested by its stronger neighbours. On the water it sits very lightly, with the tail and tips of the wings considerably elevated, turns with great ease, and swims prettily, but with no great speed.

In spring, from the middle to the end of March, these birds betake themselves to particular marshes or lakes in the interior, whether near the coast or at a great distance from it. On the tufts or along the shores they form their nests, which are composed of withered sedges, rushes, and other plants, laying generally three, sometimes two, very rarely four eggs, of an olivaceous, oil-green, or light brown colour, spotted and blotched with brownish-black and purplish-grey. They are of a rather elongated oval form, somewhat pointed, and vary greatly in size, the largest measuring two inches and four-twelfths by an inch and five-twelfths, the smallest (in my collection at least) an inch and eleven-and-a-half-twelfths, by an inch and three-and-a-half-twelfths. The young, which are hatched in the beginning of June, are covered with rather long very soft down, of a pale brown colour above, spotted with black, lighter beneath, with a large dusky spot on the throat, and several small spots on the sides; under each eye a whitish patch, and the ends of the wings pale brownish-grey; the bill greenish-brown; the feet olivaceous. The eggs, which afford delicate eating, are collected for sale, and the young, which are equally so, were formerly held in estimation, although not now brought to the market. Even the old birds, at any season, are by no means disagreeable to the palate.

During the breeding season, these birds feed on worms, larvæ, and insects, as well as fresh-water fishes. When the young are able to fly, they and their parents betake themselves to the sea-coasts, and resume their ordinary habits. By the middle of August, sometimes by the end of July, they have all left their breeding-places.

YOUNG.—When fledged, the young have the bill greenish flesh-coloured or pale brown, at the end blackish-brown; the feet pale brown tinged with flesh-colour, the hind part of the tarsus darker, the claws dark brown. The upper part of the

head and the nape are pale brown, a line from near the bill to above the eye, and the ear-coverts white ; the upper parts are brown, variegated with brownish-white, the margins of the feathers being of the latter colour. The secondary wing-coverts are grey ; the quills have their outer webs and tips brownish-black, their inner webs white, of which colour are the edge of the wing and some of the primary coverts. The rump and tail are white, the latter with a broad band of black at the end. The lower parts are greyish-white.

FIRST WINTER.—Bill flesh-coloured, brownish-black at the end ; feet flesh-coloured, claws dusky. Upper part of the head greyish-white, the feathers dark grey at the base ; fore part and sides white ; a small black crescent before the eye, and a blackish-grey patch behind it ; the hind neck greyish-white ; the back, scapulars, and secondary coverts pale bluish-grey ; the smaller wing-coverts partly of the same colour, but most of them brown toward the end, and terminally margined with light grey. Some of the primary coverts are white, but the outer is dusky, and the next has its outer web of that colour. The first primary quill has the whole outer web, the tip, and a narrow band on the inner margin black, the rest white ; the second, third, and fourth white, with a large portion of the outer web toward the end, the tip, and an inner band black, on the rest the black gradually diminishes, the inner webs are grey, the outer tinged with the same, and the tips greyish-white to a small extent ; the secondaries light bluish-grey, with a patch of dusky-brown on the outer web toward the end ; some of the inner, however, are still brown. The rump and tail white, the latter with a terminal brownish-black band, broader on the middle feathers, on the outer reduced to a slight mark. The lower parts are white ; most of the lower wing-coverts pale bluish-grey.

SECOND SUMMER.—When a year old, the bill and feet are pale brownish-red ; the head brownish-grey, space about the eye white, unless anteriorly ; back and wing-coverts as in the adult ; but the quills and tail-feathers remain as in the

preceding winter. The brown hood is acquired, and the white of the lower parts is faintly tinged with red. An individual killed in the beginning of May, compared with several others, may be described as follows:—

The bill brownish-red, of a deeper tint at the end; bare margins of eyelids also deep red, iris dusky; feet pale brownish-red, claws blackish-brown. The head, and a small portion of the neck greyish-brown, that colour descending more on the throat than on the nape; a narrow white space on the eyelids, excepting their fore part. The neck, lower parts, upper tail-coverts, and tail white; the back and wings very pale bluish-grey; the middle wing-coverts pale brown toward the end, tipped with whitish. The outer web, margin of inner web, and terminal part of the first quill, blackish-brown; part of the outer web toward the end, the tip, and inner margin of the next three, also blackish-brown, as are the inner margins of all the other primaries; the secondaries have a brown patch near the end, their tips white. The tail-feathers with a narrow bar of pale blackish-brown at the end. It thus appears, that although the smaller feathers are changed in spring, the quills and tail-feathers remain until the autumnal moult.

SECOND WINTER.—The winter plumage is now as described in the adult, and the bill and feet are deep red.

GAVIA CAPISTRATA. THE BROWN-MASKED MEW.

MASKED GULL.

Mouette a masque brun. *Larus capistratus*. Temm. Man. d'Ornith. II. 785.

Masked Gull. Yar. Brit. Birds, II. 430.

Brown-headed or Masked Gull. *Larus capistratus*. Thompson, Nat. Hist. of Ireland, III. 334.

“A light-brown mask, ending at the occiput; length of the tarsus an inch and a half; the outer quills with white shafts.”—TEMMINCK.

“WINTER PLUMAGE.—The winter plumage of this new species being absolutely, without any exception, the same as that of the Laughing Mew, its repetition is omitted. In this state it is still very easy to distinguish the species; that of the present article, always smaller, measures in entire length thirteen inches four lines; its bill is much smaller and more slender, and its tarsi as well as its toes, constantly shorter, have a reddish-brown tint.”—Temm.

“SUMMER PLUMAGE.—Forehead dull brownish-grey; top of the head, cheeks, orifice of the ears and throat light brown; occiput, nape, and fore part of the neck, pure white; the brown on the throat much darker than on the head; bill slender, reddish-brown; feet pale reddish-brown.”—Temm.

REMARKS.—A bird considerably smaller than *Gavia ridibunda*, but not much more so than individuals of many species are found to be when compared with others, and having the same proportions and plumage, but differing in having a brown mask in place of a hood, that is, the brown

of the head not extending far beyond the eyes ; and the feet reddish-brown, in place of being blood-red ; the bill, also, shorter and more slender ; the legs shorter ; and the feet smaller. Mr. Yarrel describes an individual, in summer plumage, from Shetland, thus :—" The bill brownish-red ; the head and upper part of the neck on the sides and front hair-brown, bounded by blackish-brown ; no dark colour on the occiput, but descending low on the fore part of the neck, where some of the dark feathers were tipped with white ; the remaining portion of the neck, the breast, abdomen, vent, and tail, pure white ; upper surface of the wings pale ash-grey, under surface greyish-white ; primaries white, edged and tipped with black, broadest on the inner web, the shafts white ; legs and toes brownish-red."

M. Temminck, who first characterized it, says it occurs in Baffin's Bay and Davis' Straits, and is common in the Orkneys, in Scotland, and showing itself on the coast of England. Mr. Thompson, having critically examined a number of specimens seen in Ireland and elsewhere, at various seasons, considers *L. capistratus* specifically identical with *L. ridibundus*. The reasons for this apparently correct conclusion may be seen in the third volume of the *Natural History of Ireland*. I have met with individuals presenting characters similar to those given as distinctive by Temminck ; but not having paid more attention to them than was necessary to note variations in size and colouring, I have nothing to add.

GAVIA SABINI. SABINE'S MEW.

SABINE'S GULL. FORK-TAILED GULL.

Xema sabini. Leach in Ross's Voy. App. p. lvii.

Larus sabini. Sab. in Linn. Trans. XII. 520.

Larus sabini. Jenyns, Brit. Vert. Anim. 270.

Mouette de Sabine. Larus Sabinei. Temm. Man. d'Ornith. IV. 488.

Bill an inch in length ; tarsus an inch and a half ; wings two inches longer than the tail, which is forked ; bill black to a little before the nostrils, then yellow ; outer four quills black, with the tips and inner half of inner web to near the end white. In summer the head and upper part of neck all round blackish-grey, becoming deep black behind ; the back and wings bluish-grey ; the other parts white.

Not having seen this species, of which only a very few individuals have been met with in Britain, in its winter plumage, I must confine my description of the adult to its summer state, taking for that purpose a specimen from West Greenland.

MALE IN SUMMER.—With the general aspect of the smaller Gaviæ, this has somewhat of the appearance of a Tern, its body being slender, and its tail somewhat forked. The neck is short, the head of moderate size, ovato-oblong.

The bill is rather shorter than the head, straight, slender, much compressed, and pointed ; the upper mandible with the dorsal line straight for half its length, then arcuato-declinate, the ridge convex, the sides nearly erect and little convex toward the end, the nostrils nearly linear, the edges sharp and somewhat inflected, the tip very narrow ; the lower mandible with the intercrural space long and very narrow, the prominence slight, the dorsal line almost straight, being very

slightly concave, the sides erect and nearly flat, the edges sharp and inflected, the tip very narrow.

The feet are of moderate length, rather slender; the tibia bare for nearly half an inch; the tarsus compressed, with numerous anterior scutella; the hind toe elevated and very small, with a minute blunt claw; the anterior toes slender, with numerous scutella, the second much shorter than the fourth; the lateral slightly margined; the interdigital membranes with their margin slightly concave. The claws are short, slightly arched, compressed, obtuse, that of the middle toe with the inner edge expanded.

The plumage is soft, close, and blended, on the back and wings rather dense. The wings are very long, exceeding the tail by about two inches, rather narrow, and pointed; the primaries tapering to a rounded point, the first longest, the second slightly shorter, the rest rapidly decreasing; the outer secondaries obliquely rounded, the outer web not reaching to the tip; the inner secondaries elongated. The tail is of moderate length, deeply emarginate or slightly forked.

The bill is black to a little beyond the nostrils, then yellow; the angles of the mouth, its interior, and the edges of the eyelids vermilion; the feet black. The head and upper part of the neck all round blackish-grey, that colour more extended on the throat than on the nape, and terminated by a ring of deep black. The rest of the neck, all the lower parts, the upper tail-coverts, and the tail, pure white. The back and upper surface of the wings bluish-grey; the edge of the wing from the flexure black; the first five primaries, their shafts included, black, but with half of their inner webs to near the end, and the tips, white. The secondaries and their coverts are largely tipped with white.

Length to end of tail 14 inches; extent of wings about 32; wing from flexure $11\frac{1}{2}$; tail to end of lateral feathers 5; bill along the ridge $1\frac{1}{2}$; along the edge of lower mandible $1\frac{3}{4}$; its height at the knob $\frac{3}{4}$; tarsus $1\frac{1}{2}$; middle toe 1, its claw $\frac{3}{4}$.

FEMALE.—The female is similar to the male, but somewhat less.

Length to end of tail 13 inches ; wing from flexure $10\frac{3}{4}$; tail 5 ; bill 1 ; tarsus $1\frac{5}{12}$; middle toe 1, its claw $\frac{3}{12}$.

VARIATIONS.—Not having seen more than half a dozen specimens, I have not observed any remarkable variations. The first quill in one specimen had no white mark at the tip.

HABITS.—This species was discovered by Captain Sabine on the west coast of Greenland, at a breeding station, on some low rocky islands, where it associated with the Arctic Tern. Like that species, it showed great boldness in protecting its young, and flew with impetuosity towards a person approaching its nest. Many specimens were procured, in the course of Sir Edward Parry's second voyage, on Melville Peninsula. It arrives in the arctic regions in June, and deposits on the bare ground its two eggs, which are of an olivaceous colour, blotched with brown. In August it takes its departure, and during winter and spring is seen along the coasts of Nova Scotia, and occasionally as far south as New York. Its habits do not appear to differ from those of several other species of the genus.

It was first announced as a member of the British Fauna in April, 1834, by Mr. Thompson, who exhibited to the Linneæan Society a specimen shot in Belfast Bay, in September, 1822, and made mention of another, in the Museum of the Royal Dublin Society, shot by Mr. Wall, near Kingstown. A third specimen, shot in September, 1834, on the shore of Belfast Bay, and a fourth, killed in the Bay of Dublin, in September, 1837, are subsequently recorded by him. All these birds were in their first year's plumage. Mr. Yarrell mentions one as having been killed at Milford Haven, in the autumn of 1839, and another as having been obtained in Cambridgeshire. A few individuals are also stated to have been procured on the coasts of Holland and France.

GAVIA BONAPARTII. BONAPARTE'S MEW.

BONAPARTIAN GULL.

- Larus Bonapartii. Bonapartian Gull. Richards. and Swains. Fauna Bor.
Amer. II. 425.
Bonapartian Gull. Larus Bonapartii. Aud. Ornith. Biogr. IV. 212.
Bonapartian Gull. Larus Bonapartii. Thomps. Nat. Hist. of Ireland,
III. 317.

Bill an inch and a third in length, slender, black; tarsus an inch and a third; feet red; wings an inch and three-fourths longer than the tail, which is even at the end; outer web of first quill black, of the next three white. In summer, the back and wings light bluish-grey; the lower parts and tail white; the head and throat greyish-black; the female brown.

MR. THOMPSON announced, in 1848, the capture of an individual of this species at Belfast, and at the same time gave a very minute description of it. The following, however, is taken from American specimens:—

MALE IN SUMMER.—Of smaller size and more slender form than *Xema ridibunda*. Head rather small, ovate-oblong, narrowed and compressed anteriorly. Bill shorter than the head, nearly straight, slender, compressed. Upper mandible with its dorsal outline straight for half its length, then gently arcuato-declinate, the ridge narrow, the edges sharp and somewhat inflected, the tip narrow, with slight notches. Lower mandible with the angle long and very narrow, the prominence slight, the dorsal line ascending and slightly concave, the tip acute. Nostrils linear, pervious, rather more than a quarter of an inch in length. Legs rather short; tibia bare for eight-twelfths of an inch; tarsus

compressed, covered anteriorly with numerous scutella, posteriorly with very small oblique scutella. Toes slender, the first extremely small, the outer slightly shorter than the third; interdigital membranes deeply emarginate. Claws small, compressed, moderately arched, rather obtuse.

Plumage full, rather close, blended. Wings very long and pointed; primaries tapering, narrow but rounded at the end; secondaries obliquely rounded, the inner web extending beyond the outer. Tail of moderate length, almost even.

Bill black, inside of mouth vermilion. Feet "orange, slightly tinged with vermilion;" claws brown. Head and upper part of neck all round greyish-black. Back and wings light greyish-blue. Lower part of neck all round, breast, sides, abdomen, lower wing-coverts and tail-coverts, edge of the wings, hind part of the tail, tail-feathers and their coverts, white. Four outer primary coverts, shaft and inner web of the outer primary, both webs of the second, outer webs of the third and fourth, white, as are their shafts. Outer web of first primary, excepting a small portion toward the end, and its tip to the length of half an inch, black, as are the ends of the next, which, however, have a small white tip, the black on the third and fourth quills about an inch in length, and extending along their inner edges about two inches and a half from the end. The closed wings of this species and *Gavia ridibunda* resemble each other in having a white longitudinal band, margined by the black of the outer web of the first primary.

Length to end of tail 14 inches; wings extending beyond the tail $1\frac{1}{2}$; wing from flexure $10\frac{3}{4}$; tail $4\frac{1}{4}$; bill along the ridge $1\frac{3}{12}$; tarsus $1\frac{3}{12}$; middle toe $1\frac{3}{12}$, its claw $\frac{3}{12}$.

FEMALE IN SUMMER.—Mr. Audubon states that "the female is somewhat smaller, and resembles the male, but has the head and upper part of the neck umber-brown."

YOUNG IN WINTER.—According to the same author, the young in December have the "bill greyish-black, iris dark brown; feet flesh-coloured, claws dusky. Head and neck greyish-white; a small black patch about an inch behind

the eye on each side. Upper parts dull bluish-grey; many of the wing-coverts greyish-brown, edged with paler; quills as in the adult; rump and tail white, the latter with a broad band of black at the end, the tips narrowly edged with whitish."

HABITS.—This species, which was first described in the *Fauna Boreali-Americana* of Swainson and Richardson, who state that it is common in all parts of the fur countries, has also been met with by Mr. Audubon in various parts of the east coast of North America, as well as on the Mississippi and Ohio. Its flight, he says, is "light, elevated, and rapid, resembling in buoyancy that of some of our Terns more than that of most of our Gulls, which move their wings more sedately."

Mr. Thompson's specimen, the first known to have visited Europe, was killed on the tidal portion of the river Lagan, at Belfast, on the 1st of February 1848. It was a young bird, which, he considers, would have attained full plumage at the next moult. All the particulars may be seen in the *Annals of Natural History* for 1848, p. 192, or the *Natural History of Ireland*, vol. iii. p. 317,

GAVIA MINUTA. THE LITTLE MEW.

LITTLE GULL.

"Larus minutus. Pallas. Reis. III. 702."

Larus minutus. Lath. Ind. Ornith. II. 813.

Little Gull. Mont. Ornith. Dict. Suppl.

Mouette pygmée. Larus minutus. Temm. Man. d'Ornith. II. 787.

Little Gull. Larus minutus. Selby, Illust. Brit. Ornith. II. 484.

Larus minutus. Jen. Brit. Vert. Anim. 271.

Bill scarcely an inch in length, black; tarsus an inch long, red; back and wings light bluish-grey, lower parts white; outer webs of outer primaries grey; inside of wings blackish-grey. In summer, the head and throat black, the bill tinged with red, the feet vermilion. In winter, the head white, its hind part and the nape streaked with dusky, the bill black, the feet purplish-pink.

NOT having seen more than three specimens of this species, of none of which I have taken descriptions, I must have recourse to the accounts of it given by various writers.

ADULT IN WINTER.—"Forehead, space between the eye and the bill, a large spot behind the eyes, throat, all the other lower parts and the tail, pure white; occiput, nape, a spot before the eyes and over the orifice of the ears, greyish-black; all the other upper parts pale bluish-grey; all the tail-feathers of that colour, terminated by a large pure white space; interior of the wings blackish; bill and iris blackish-brown; feet of a very bright vermilion. Length ten inches two lines; the wings extend an inch beyond the end of the tail."—TEMMINCK.

Mr. Thompson gives the following description of the adult male shot near Belfast in December, 1847:—"Length

(total) from point of bill to end of tail $10\frac{6}{12}$ inches, of bill above $\frac{1}{12}$, of bill to rictus $1\frac{6}{12}$; of wing from carpus $9\frac{2}{12}$; of tarsus 1; of middle toe exclusive of nail 1. 'Forehead, cheeks, and a [small] space behind the eyes pure white' (Jenyns, p. 271). All the under plumage of a beautiful roseate tint; a spot at the anterior angle of the eye black; occiput, nape, and ear-coverts dark grey of different shades, darkest or blackish-grey on ear-coverts; upper part of the body and wings pale bluish-ash; plumes beautifully firm in texture, so as to exhibit a uniform mass of one tint; primaries and secondaries 'broadly tipped with white; inside of wings deep blackish-grey;' tail pure white; bill black; inside mouth dull orange; sides black, with brownish tinge; tarsi, toes, and webs of feet, both on upper and under side, of the same uniform hue of pale salmon-colour. Its weight rather exceeded $3\frac{1}{2}$ oz."

ADULT IN SUMMER.—"The whole head, and the upper part of the neck, enveloped by a black hood; a white crescent behind the eyes; part of the lower neck, and all the lower parts, roseate-white; rump and tail pure white; back, scapulars, and the entire wing of a pure and very pale bluish-grey; the primaries grey, and, with the secondaries, tipped with white; bill of a very deep lake-red; iris deep brown; feet crimson. Length eleven inches five lines."—TEM-MINCK.

HABITS.—Should one assert that this bird lives upon small fishes and crustacea, it is probable that actual observation would ultimately confirm his conjecture. M. Temminck feeds it with insects and worms. Scarcely anything of importance, however, respecting its habits seems to be known. Russia, Siberia, the Caspian Sea, the Mediterranean, the Swiss lakes, and the Baltic, are mentioned as included in its distribution. As a British bird, it was first described and figured by Montagu, from an individual in its first winter plumage, shot on the Thames, near Chelsea. Several individuals have since been obtained in various parts of England, from Cornwall and Devonshire to the mouth of the Tyne.

Mr. Selby has figured and described a specimen in its first plumage, killed on the Firth of Clyde, and preserved in the Museum of the University of Edinburgh, where there is also another said to have been shot on the Solway. Mr. Thompson mentions an adult specimen in the Museum of the Dublin Natural History Society, shot on the Shannon in May, 1840. A second adult individual, a male, shot in the estuary about three miles distant from Belfast, in December, 1847, has been briefly described by the same naturalist, who also makes mention of three other birds of this species, one of them, an adult, seen on Strangford Lough in January 1848, one wounded there in February, 1849, the third, in adult plumage too, shot in Belfast Bay in November, 1848.

YOUNG.—“Forehead, region of the eyes, all the lower parts and two-thirds of the tail white; top of the head and occiput blackish-grey; nape and back brownish-grey; small wing-coverts whitish, spotted with grey and blackish; the middle coverts blackish-grey, bordered with pale brown; the larger whitish externally and at the end; the first four quills black on the outer webs and at the end, but white on the inner webs; the next three grey externally, and with the point white; tail a little forked, terminated by a broad black band, which is not so large on the outermost feather; bill blackish-brown, feet livid flesh-colour.”

PROGRESS TOWARD MATURITY.—A young bird killed in the middle of November, is thus described by Mr. Yarrell:—“Bill black, irides very dark brown; forehead and lore white; top of the head, occiput, and ear-coverts, greyish-black; nape of the neck white, forming a collar by uniting with the white of the front; below the nape a broader black band extending towards, but not reaching, the wings; back, scapulars, and tertials pale pearl-grey, with a few black feathers appearing through; wing primaries and secondaries greyish-black, tipped with white, nearly the whole of the inner webs white; greater wing-coverts pearl-grey; smaller coverts black, edged with grey; upper tail-coverts white; upper surface of tail-feathers white, with a broad terminal band of black, which is

broad on the middle feathers, the outer tail-feathers on each side wholly white ; all the under surface of the body and wings, under tail-coverts, and each outside tail-feather white, the other tail-feathers white, with a narrower margin of greyish-black ; legs, toes, and interdigital membranes in this preserved specimen pale yellowish-brown. Whole length ten inches and one-eighth ; wing from the wrist eight inches and three-quarters."

RHODOSTETHIA. ROSY-GULL.

A SINGLE species, remarkable for its wedge-shaped tail and the beautiful roseate tint of its plumage, has been considered by some ornithologists as entitled to generic distinction. I am not prepared to say that it is not. The Prince of Canino, in his "Comparative List," names this genus *Rossia*, after Captain Sir James Ross, to whom also Mr. Owen has dedicated a genus of Cephalopodous mollusca, under the same name. This latter genus has been defined and characterized, and therefore must remain; while the other, being nothing but a name, must vanish. The other proposed name ought, accordingly, to be adopted. The following generic character is taken from the only specimen I have seen:—

Body moderate; neck rather short; head ovate. Bill short, rather slender, compressed; upper mandible with the dorsal line straight for half its length, arcuato-decurvate toward the narrow tip; lower mandible with the intercrural space very narrow, the prominence slight, the dorsal line concave, the tip small. Legs short; tibia bare for a very short space; tarsus rather stout, anteriorly scutellate, rough behind; first toe short, with a large curved claw; anterior toes moderate, with the membranes entire; claws rather large, arched, compressed, acute. Plumage soft and full; wings long, rather narrow, pointed; tail cuneate, of twelve feathers, of which the central are much longer than the lateral.

RHODOSTETHIA ROSSII. ROSS'S ROSY GULL.

ROSS'S GULL. CUNEATE-TAILED GULL.

Larus Rossii. Cuneate-tailed Gull. Richards' Fauna Bor. Amer. II. 427.
 Ross's Gull. Larus Rossii. Audub. Amer. Ornith. Biogr. V. 324.

Wings about an inch longer than the tail, of which the medial feathers exceed the lateral by about an inch. In summer the bill black; margins of eyelids reddish-orange; feet vermilion; fore part of back, and both surfaces of wings, pale bluish-grey; outer web of first quill blackish-brown; a narrow ring on the neck, and some feathers near the eyes, brownish-black; the rest of the plumage white, but all the lower parts richly tinged with rose-colour.

THE above description and the generic character are taken from a specimen in the Museum of the University of Edinburgh. The species was first alluded to by myself, in a paper on Gulls, under the temporary name of *Larus roseus*. Sir William Jardine described and figured it under the same name. Dr. Richardson then named it *Larus Rossii*, Cuneate-tailed Gull, which may be considered the first authentic name, though Ross's Gull ought to have been the English name. As to the "priority," which is now the fashion, Sir W. Jardine unquestionably has it, he having adopted my name, to which, however, I lay no claim, as I used it simply for convenience, in alluding to a peculiar form of tail among Gulls, and then threw it to the east wind. Its appearance, however, caused some small yelpings.

The species is thus characterized and described in the *Fauna Boreali-Americana* :—

“Cuneate-tailed Gull, with a pearl-grey mantle. Wings longer than the cuneiform tail. The outer web of the first tail-feather blackish; a slender black bill; tarsi an inch long, and, as well as the feet, vermilion-red.

“Description of a specimen killed, June, 1823, at Alagnak, Melville Peninsula, Lat. $60\frac{1}{4}^{\circ}$ N.

“COLOUR.—Scapulars, interscapulars, and both surfaces of the wing, clear pearl-grey; outer web of the first quill blackish-brown to its tip, which is grey; tips of the scapulars and lesser quills whitish. Some small feathers near the eye, and a collar round the middle of the neck, pitch-black. Rest of the plumage white; the neck above and the whole under plumage deeply tinged with peach-blossom-red in recent specimens. Bill black; its rictus and the edges of the eyelids reddish-orange. Legs and feet vermilion-red; nails blackish.

“FORM.—Bill slender, weak, with a scarcely perceptible salient angle beneath; the upper mandible slightly arched and compressed towards the point; the commissures slightly curved at the tip. Wings an inch longer than the decidedly cuneiform tail, of which the central feathers are an inch longer than the lateral. Tarsi rather stout; the thumb very distinct, armed with a nail as large as that of the outer toe.

“The other specimen killed by Mr. Sherer a few days later differs only in the first primary coverts having the same dark colour, with the outer web of the first primary itself.

“Length to end of tail 14 inches; tail $5\frac{1}{2}$; wing $10\frac{1}{2}$; bill along the ridge $\frac{3}{4}$; rictus $1\frac{1}{4}$; from nostril to tip of bill four-twelfths and a half; tarsus $1\frac{1}{2}$; middle toe ten-twelfths and a half, its nail $\frac{3}{12}$.”

Only two specimens were obtained on the Arctic Expeditions, and one of them was given to Sir Joseph Sabine. In my “Manual of British Birds,” I stated that “this species has once occurred in Ireland.” But, as I did not see it there, and probably was misinformed, and cannot recollect anything about the matter, I must now state, as Mr. Thompson, our great Irish authority, has had no announcement of its occurrence there, that it remains to be added to the Fauna of that country. Since then, however, it has been introduced into

the English Fauna, an individual having been killed by a gamekeeper, in February, 1847, near Tadcaster, as is authenticated by Mr. Charlesworth, whose notice in the Proceedings of the Yorkshire Philosophical Society, has been copied into the Zoologist, vol. v. p. 1782—a statement which I take from Mr. Thompson.

STERNINÆ.

TERNS AND ALLIED SPECIES.

ALTHOUGH there is a great affinity between Gulls and Terns, the smaller species of the one group and the larger of the other being very similar in form, colouring, and habits, the differences which they present are as great as those between several other equally allied families. The Sterninæ are easily recognized by their slender, elongated form; nearly straight, compressed, exceedingly attenuated bill; very diminutive feet; and very long, narrow, acuminate wings.

The bill is about the length of the head, straight or slightly arcuate, tapering, compressed, very acutely pointed. The tongue is long, slender, and pointed. The œsophagus wide; the stomach rather small, moderately muscular, with a dense, longitudinally rugous epithelium; the intestine of moderate length and width, with small cœca, and a large globose cloaca.

The nostrils are direct, linear, pervious; the eyes of moderate size, as are the aural apertures. The legs are very small, slender, with the tibia bare to a considerable extent; the tarsus little compressed; the hind toe very small, the anterior toes rather short and slender; their webs emarginate; the claws arcuate, compressed, acute, that of the third toe proportionally large.

The plumage is soft, of rather loose texture; the feathers broad and rounded. The wings extremely elongated; the secondary quills of moderate length or rather short; but the primaries very long, the outer tapering to a narrow point. The tail various, often forked, of twelve feathers.

White, pale bluish-grey, and black are the prevailing

colours. The females are coloured like the males, but the young are mottled with brown.

These birds are remarkable for their very buoyant, bounding, and gliding flight. They feed on small fishes and crustacea, seeking their food chiefly along the shores of the ocean; some, however, subsist on insects, which they obtain on fresh water. They nestle on the ground, sometimes in bushes, laying from two to four spotted eggs. The young, covered with down, soon walk, but generally remain about their birthplace until able to fly.

The genera are Rhynchops, Megalopterus, Sylochelidon, Gelochelidon, Sterna, Hydrochelidon, and some others not well defined.

SYNOPSIS OF THE BRITISH GENERA AND SPECIES.

GENUS I. SYLOCHELIDON. STRONG-BILLED-TERN.

Bill nearly straight, compressed, tapering, stout, with the edges sharp, and the tip elongated and pointed; the upper mandible with its outline gently arcuate, the lower with the junction of the crura beyond the middle and slightly prominent; legs short, slender; anterior toes small; wings very long and acuminate; tail forked.

1. *Sylochelidon Caspia*. *Caspian Strong-billed Tern*. Tarsus an inch and two-thirds long; bill vermilion; feet black; tail short.

GENUS II. STERNA. TERN.

Bill about the length of the head, nearly straight, slender, compressed, tapering, with the edges sharp, and the tip elongated and pointed; the upper mandible with its outline gently arcuate, the lower with the junction of the crura medial, scarcely prominent; legs very short, slender; anterior toes small, their membranes emarginate; wings very long and acuminate; tail forked.

1. *Sterna velox*. *Ruppell's Tern*. Bill yellowish-horn-colour; feet black; tarsus an inch long; tail and wings about equal.

2. *Sterna Cantiaea*. *Sandwich Tern*. Bill black, with the points yellowish; feet black, with the soles yellow; tarsus an inch long; tail shorter than the wings.

3. *Sterna Hirundo*. *Common Tern*. Bill rather slender, coral-red, black at the end; feet red; tarsus about tenths long; tail about the same length as the wings.

4. *Sterna arctica*. *Arctic Tern*. Bill slender, vermilion; feet crimson; tarsus about six-tenths long; tail about half an inch longer than the wings.

5. *Sterna Dougalli*. *Roseate Tern*. Bill slender, black, at the base orange-red; feet vermilion; wings about three inches shorter than the tail.

6. *Sterna minuta*. *Little Tern*. Bill light orange-yellow, with the tip black; feet light orange-red; wings an inch longer than the tail.

GENUS III. HYDROCHELIDON. MARSH-TERN.

Bill about the length of the head, nearly straight, slender, compressed, tapering, with the edges sharp, and the tip elongated and pointed; the upper mandible with its outline gently arcuate, the lower with the junction of the crura mesial; legs very short, slender; anterior toes small, their membranes deeply emarginate; wings very long and acuminate; tail of moderate length, emarginate.

1. *Hydrochelidon nigra*. *Black Marsh-Tern*. Bill black; feet dark reddish-brown; tail about two inches shorter than the wings; head, neck, breast, and abdomen greyish-black; upper parts dark bluish-grey.

2. *Hydrochelidon leucoptera*. *White-winged Marsh-Tern*. Bill reddish-brown; feet coral-red; tail about two inches and a half shorter than the wings; head, neck, fore part of breast and abdomen black; upper wing-coverts, rump, tail, and its coverts white.

3. *Hydrochelidon leucopareia*. *Whiskered Marsh-Tern*. Bill rather stout and, with the feet, red; tail about two

inches shorter than the wings; upper part of head black; a white band from the bill under each eye; back, wings, and tail deep leaden-grey; lower parts grey, becoming darker on the sides and abdomen.

GENUS IV. GELOCHELIDON. GULL-BILLED-TERN.

Bill about the length of the head, nearly straight, rather slender, compressed, with the tips less elongated and the angle more prominent than in the last genus; legs very short, slender; anterior toes small, their membranes emarginate; wings very long and acuminate; tail emarginate, the lateral feathers rounded.

1. *Gelochelidon Anglica*. *Marsh Gull-billed-Tern*. Bill and feet black; hind claw straight.

V. MEGALOPTERUS. NODDY.

Bill longer than the head, nearly straight, compressed, very acute. Feet very short; toes slender; interdigital membranes full, the inner slightly concave. Wings very long, narrow, pointed; tail long, graduated.

1. *Megalopterus stolidus*. *Common Noddy*. Bill rather stout; plumage sooty-brown; primary quills and tail-feathers brownish-black; upper part of the head pale ash-grey; a black spot before each eye.

SYLOCHELIDON. STRONG-BILLED-TERN.

THE genus *Sterna* of Linnæus is a very natural assemblage, composed of numerous species, which, if not from any absolute necessity, resulting from strongly-marked differences, yet from analogy of similar cases, in which expediency furnishes a pretence, if not a reason, may be placed in small groups, to be considered as genera. Some of those proposed by authors are quite incapable of being defined or characterized, although they are distinguishable by one who is satisfied with minute differences. The large-billed species form a genus which in reality differs very little from the smaller billed, and which I cannot define better than as follows :—

Body moderately stout, with the neck short; the head broadly ovate, anteriorly narrowed. Bill nearly straight, tapering, compressed, stout, with the edges sharp, the tips elongated and pointed; the upper mandible gently arcuate, the lower with the junction of the crura beyond the middle and slightly prominent; legs short, slender; anterior toes small; wings very long and acuminate; tail forked.

Being the largest species of their family, with the bill more developed, they have been assumed to be more rapacious, and accordingly named :—Σῶλον, prey; κελιδων, swallow. One or two compilers write *Stylochelidon*; and not a few are quite puzzled as to the gender of *Chelidon*, some making it neuter, others masculine or feminine. Even the learned Prince of Canino makes *Sylochelidon* and *Gelochelidon* feminine, and *Hydrochelidon* neuter.

SYLOCHELIDON CASPIA. THE CASPIAN STRONG-BILLED-TERN.

Sterna caspia. Lath. Ind. Ornith. II. 803.

Hirondelle-de-mer Tehegrava. *Sterna caspia.* Temm. Man. d'Ornith.
II. 733.

Caspian Tern. *Sterna caspia.* Selby, Illustr. Brit. Ornith. 463.

Sterna caspia. Jen. Brit. Vert. Anim. 264.

Sylochelidon caspia. Bonap. Comp. List, 62.

Bill vermilion; tarsus an inch and two-thirds long; feet black; tail short, forked. In winter, the forehead and part of the crown white, the hind part of the head black. In summer, all the upper and hind parts of the head black. Plumage white; back and wing-coverts bluish-grey; tail of a paler tint; quills greyish-brown.

SEVERAL specimens of this, the largest European species of its family, have of late years been obtained in England. I have not seen any of them, however, and am therefore obliged to describe it from foreign sources.

ADULT IN SUMMER.—Bill rather longer than the head, stout, compressed, tapering, pointed. Feet rather small; the tibia bare for nearly an inch; the tarsus little compressed; the interdigital membranes with the margin concave; the claws rather long, arcuate, compressed, acute. The plumage soft and mostly blended; the wings very long, extending far beyond the forked tail, which is of moderate length.

Bill vermilion, the tip paler. Feet black. All the upper part of the head and the nape deep black; sides of the head, neck all round, and all the lower parts pure white. Back,

wings, and tail light bluish-grey; the outer six primaries of a darker tint.

Length about 20 inches; bill $2\frac{9}{12}$, along the edge of lower mandible $3\frac{2}{12}$; wing from flexure $16\frac{9}{12}$; tail 6; tarsus $1\frac{8}{12}$; middle toe $1\frac{2}{12}$, its claw $\frac{6}{12}$.

ADULT IN WINTER.—The head white, its hind part variegated with black. Otherwise as in summer.

HABITS.—It is said to inhabit the Caspian Sea, the Grecian Archipelago, some other parts of the Mediterranean, the Baltic, and occasionally to be seen in various parts of Denmark, Germany, Holland, France, and Switzerland; as well as to have been found at Senegal and the Cape of Good Hope. Two individuals are mentioned by Messrs. Paget as having been killed near Yarmouth; one of them in October, 1825. One, killed at Aldborough, is, according to Mr. Jenyns, in the Museum of the Cambridge Philosophical Society. Mr. Yarrell mentions another shot in Norfolk in 1839. It does not appear to have been met with in Scotland. It is said to feed on fishes, to nestle on the sand or on bare rocks on the sea-shore, and to lay two or three eggs of a greyish-green or yellowish-grey colour, marked with large brown and dusky spots.

YOUNG.—According to Temminck, the young when fledged have all the lower parts pure white; the upper greyish-brown, marked with large spots and transverse bars of blackish-brown; the tail-feathers with a large blackish-brown terminal space; the quills almost entirely blackish-brown.

STERNA. TERN.

THE Terns properly so called may be described as being of a very slender, elongated form, with the neck short or of moderate length; the head oblong. The bill about the same length as the head, nearly straight, compressed, tapering, finely pointed; the upper mandible with the dorsal line slightly arched, the lower with the junction of the crura medial, the dorsal line straight; the edges of both sharp, and the tips extended into very slender points.

The tongue slender, tapering, horny, and slit at the point. The œsophagus very wide; the stomach muscular, with a dense rugous epithelium; the intestine of moderate length and width, with small cœca, and a large cloaca.

Nostrils sub-basal, linear-oblong, direct, pervious. Eyes of moderate size. Apertures of ears moderate. Feet very small; tibia bare below; tarsus very short, scutellate; toes small, slender, the first very diminutive, the third longest; interdigital membranes emarginate; claws arched, compressed, acute, that of the third toe proportionally large.

Plumage mostly blended; the feathers broad and rounded. Wings very long, narrow, with long tapering primaries, the outer longest. Tail of moderate length, or long, forked of twelve feathers.

These birds are all of small size, and remarkable for the elegance of their form, and their buoyant, gliding flight. They are generally white beneath, pale bluish-grey on the back, with the upper part of the head black. The occipital feathers elongated. The young are mottled with brown. Several of the recently proposed genera are included in this.

STERNA VELOX. RUPPELL'S TERN.

IN the Annals of Natural History for September, 1847, and in the third volume of his Natural History of Ireland, Mr. Thompson gives an account of a specimen of this species, killed near Sutton, a place on the road between Dublin and Howth, in the end of December, 1846. Two others were stated to have been in company with it. The following particulars were noted down respecting it :—

“Length, total (stuffed) to the end of longest bill-feathers $20\frac{3}{12}$ inches ; of bill above from forehead to point $2\frac{1}{2}$; from rictus to point $3\frac{4}{12}$; of wing from carpus $13\frac{0}{12}$; of tarsus about 1 ; of middle toe to base of nail $1\frac{1}{2}$; of nail itself, measured in a straight line, about $\frac{4}{12}$.

“Wing and longest tail-feathers about of equal length ; outer or longest tail-feathers exceed the middle by three inches. Bill wholly yellowish horn-colour ; legs and toes wholly black. Colour of the entire plumage the same as that of the Common Tern (*S. hirundo*), but the back is rather of a darker shade than that of the latter when adult. The black of the head does not reach within one-third of an inch of the bill ; space between the termination of the black plumage and the bill, pure white. The specimen is evidently adult.”

STERNA CANTIACA. THE SANDWICH TERN.



FIG. 98.

Sterna Cantiaca. Gmel. Syst. Nat. I. 606.

Sterna Boysii. Lath. Ind. Orn. II. 806.

Sandwich Tern. Mont. Orn. Diet. Suppl.

Hirondelle-de-mer Caugek. *Sterna cantiaca.* Temm. Man. d'Orn. II. 735.

Sandwich Tern. *Sterna cantiaca.* Selb. Illustr. II. 464.

Sterna Cantiaca. Sandwich Tern. Jen. Brit. Vert. An. 265.

Thalasseus Cantiacus. Bonap. Comp. List, 61.

Bill rather longer than the head, black, with the points yellowish; feet black, with the soles yellow; tarsus an inch long; tail much forked, shorter than the wings. In summer the upper part of the head and nape deep black. In winter these parts white, spotted with black; throat, cheeks, neck all round, hind part of back, tail, and all the lower parts, white, tinged with rose-colour, which is brighter in summer. Young with the upper part of the head variegated with black, white, and pale reddish; fore part of back and scapulars reddish, barred with blackish-brown; lower parts white; bill livid, with the extreme tips yellowish.

THIS species, smaller and less robust than the Caspian Tern, is considerably larger and stouter than the Roseate and Common Terns, from which it is at once distinguishable by its black, yellow-tipped bill. Although not of frequent occurrence on any part of our coasts, I have been able to procure recent and entire specimens for description.

MALE IN WINTER.—The general form is slender; the body rather long, somewhat compressed, but with the pectoral muscles well developed; the neck of moderate length; the head rather large, considerably compressed. The bill is rather longer than the head, almost straight, being very slightly arched, much compressed, and acuminate. The upper mandible has the dorsal line slightly declinato-arcuate, the ridge convex, narrowed beyond the nostrils, the sides convex, nearly erect toward the end, the edges sharp, direct, overlapping, the nasal groove of moderate length, narrow, with a shallow groove passing obliquely from the nostrils to the margin. The lower mandible has the angle long and very narrow, the commissure somewhat prominent, the dorsal line stright, the sides erect, a little convex, the edges very thin, with an external groove for the reception of the upper, the tip extremely slender and acuminate. The gape-line, which commences below the middle of the eye, is a little arcuate. The mouth is rather wide, measuring nine-and-a-half-twelfths across, and considerably dilatable. The tongue is an inch and seven-twelfths long, very slender, trigonal, emarginate, and papillate at the base, horny, and thin-edged in its terminal two-thirds, channelled above, the tip of two very slender points.

The nostrils are linear-elliptical, sub-basal, equidistant from the margin and ridge-line, four-twelfths long. The eyes are of moderate size, the width of their aperture being four-twelfths. That of the ear very small, measuring two-twelfths. The feet are very small; the tibia very short and slender, as is the tarsus, which has fifteen anterior scutella. The first toe diminutive, with six scutella; the second considerably shorter than the fourth, and with fifteen scutella; the third with twenty-four, and not much longer than the

fourth, which has twenty-two; the webs with their margin deeply concave. The claws are well arched, much compressed, laterally sulcate, bluntish; that of the hind toe almost straight and conical.

The plumage is rather compact, with a little silky gloss; on the lower parts rather blended; the feathers mostly elliptical and rounded; but on the hind-head and nape elongated, lanceolate, and acuminate. The wings are very long, surpassing the tail by two inches, extremely narrow, and with thirty-two quills; the first quill longest, the other primaries very rapidly graduated; their shafts very large and strong, their webs narrow; secondaries incurved, a few of the outer emarginate, the rest obliquely rounded, the inner rather pointed. The tail is moderate, or rather long, deeply forked; the two lateral feathers tapering, and longer than the medial by an inch and three-fourths.

The bill is black, but with the tips of a yellow horn-colour for five-twelfths of an inch. The mouth internally is dull flesh-coloured. The iris brown. The feet black, with a tinge of brown; the soles of the toes dull reddish-yellow. The upper part of the head is variegated with white and black, the feathers being white, with a medial black spot or patch; but on the occiput and nape they are all bluish-black, with white margins. There is a black crescentic patch before the eye. The throat, cheeks, neck all round, breast, abdomen, and sides, as well as the lower coverts of the tail and wings, all white, with a delicate tinge of rose-colour, which is little apparent until the feathers are put aside. The back and upper surface of the wings are light greyish-blue. The outermost four quills have the outer webs and rather more than the same breadth of the inner blackish-grey. The shafts of all the quills, the greater part of the inner webs, their tips, and those of the scapulars, are white; as are the upper tail-coverts and tail.

Length to end of tail 16 inches; extent of wings $33\frac{1}{2}$; bill along the ridge $2\frac{3}{12}$; along the edge of lower mandible 3; wing from flexure $12\frac{1}{2}$; tail $5\frac{1}{2}$; bare part of tibia $\frac{8}{12}$; tarsus $\frac{2}{12}$; first toe $\frac{2}{12}$, its claw $\frac{1}{12}$; second toe $\frac{7}{12}$, its claw $\frac{3}{12}$; third toe $\frac{11}{12}$, its claw $\frac{4}{12}$; fourth toe $\frac{9}{12}$, its claw $\frac{3}{12}$.

FEMALE IN WINTER.—The female is in all respects similar to the male.

Length to end of tail $15\frac{3}{4}$ inches; extent of wings 33; tarsus $\frac{2}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{5}{12}$.

VARIATIONS.—It has been alleged by some authors that the pink blush is not perceptible in the winter plumage; but my observation enables me to contradict this opinion. As the plumage becomes old, the pale grey tint on the outer quills disappears, in consequence of the abrasion of the barbules, and the exposed surface is black. Otherwise I am not aware of any remarkable changes, until the spring moult, after which the appearance is as follows:—

MALE IN SUMMER.—The bill and feet as in winter. The whole upper part of the head, including the forehead, and the elongated feathers on the nape, deep black. The other parts are coloured as in winter, only the pink tinge of the neck, breast, and sides, is richer.

FEMALE IN SUMMER.—Similar to the male.

HABITS.—This Tern has repeatedly been shot along the shores of the Firth of Forth. In the end of September, 1840, I procured these two individuals, an adult male of which the plumage was already complete, and a young bird, which had undergone its first moult. Bewick describes a pair that were shot on the Fern Islands, on the coast of Northumberland, in 1802; and Mr. Selby, who has found them resorting in great numbers to these islands, as well as to the Isle of Coquet, a few miles to the southward, gives the following account of them:—"Here a station is selected apart from the other species, generally on a higher site, and the nests are so close to each other as to render it difficult to cross the ground without breaking the eggs, or injuring the unfledged young. Upon this coast it is called, *par excellence*, 'The Tern,' all the other species passing under the general name of 'Sea Swallows.' Its habits strongly resemble those of its genus,

and it subsists upon similar kinds of fish, the sand-launce and young sea-fish forming the principal supply, and upon which it precipitates itself as they rise near to the surface of the ocean. Its flight is strong and rapid, making a great advance at each stroke of the pinions, and, except when engaged in incubation, it is almost constantly on the wing, uttering at intervals a hoarse and grating cry, which can be heard at a very great distance, and gives notice of its approach long before it is discoverable by the eye. If much disturbed by being fired at, or if the eggs be repeatedly taken at the commencement of the season, it deserts the station first selected, and retires to some other place less liable to molestation. As soon as the young birds become tolerably fledged, but before they are altogether able to fly, they frequently take to the water, swimming off to the smaller rocks, where they continue to be fed by the parents until capable of joining them in their fishing excursions. The time of their arrival is about the middle of May; incubation commences in the first week of June, and nearly the whole have again taken their departure for more southern latitudes by the end of September. The eggs are three or four in number, for the reception of which a shallow hole is scratched amongst the sea-campion (*Silene maritima*), or other plants that may happen to grow on the selected place. In size they are about equal to those of the Golden Plover, and are usually of a cream or wood-brown colour, blotched with dark brown and black, and with other spots of a lighter shade appearing as it were beneath the shell. The common varieties of them are either with fewer spots and blotches upon a white ground, or of a deep oil-green, with spots of a darker shade." On the southern coasts of England, where this species was first observed, it is said to be of unfrequent occurrence, although it is supposed to breed there.

According to M. Temminck, it is very abundant in the islands of North Holland, where it nestles in large flocks; and it has been met with in other parts of Europe. Mr. Audubon, in May, 1832, found it on one of the Florida Keys, where he obtained a considerable number, one of which, now before me, so exactly resembles our bird in every particular.

that I can have no doubt as to their specific identity. His account of its habits is as follows:—"While travelling, it advances by regular sharp flappings of its wings, which propel it forward much in the manner of the Passenger Pigeon; when single and remote from a flock, it pushes on with redoubled speed. While plunging after the small mullets and other diminutive fishes that form the principal part of its food, it darts perpendicularly downwards with all the agility and force of the Common and Arctic Terns, nearly immersing the whole body at times, but rising instantly after, and quickly regaining a position from which it can advantageously descend anew. Should the fish disappear as the bird is descending, the latter instantly recovers itself without plunging into the water. Its cries are sharp, grating, and loud enough to be heard at the distance of half a mile. They are repeated at intervals while it is travelling, and kept up incessantly when one intrudes upon it in its breeding grounds, on which occasion it sails and dashes over your head, chiding you with angry notes more disagreeable than pleasant to your ear. How many days these birds had been laying when I discovered the key on which they breed, I cannot say; but many of them were still engaged in depositing their eggs, and none were as yet sitting on those which, being three together, seemed to form the full complement. They had been dropped on the sand, at short intervals, with scarcely any appearance of a hollow for their reception. In some instances they were laid at the foot of a scanty tuft of grass; but all were fully exposed to the heat of the sun, which at this time I thought almost sufficient to cook them. The eggs varied as much in colour as those of the Arctic Tern and Foolish Guillemot, and were equally disproportionate to the size of the bird, their average length being two inches and one-eighth, their greatest breadth one inch and three-and-a-half-eighths. They are of an oval form, but rather sharp at the larger end. Their ground colour is yellowish-grey, varying in depth, and all more or less spotted, blotched, or marked with different tints of umber, pale blue and reddish. I never saw the Sandwich Tern on any other portion of our coasts than between the Florida Keys and Charleston, and from whence it first came

there, or how it went thence to Europe, is an enigma which may perhaps never be solved."

These observations, made by ornithologists of so much celebrity, may suffice in the absence of any by myself. It remains now only to describe the young.

YOUNG.—When fledged, and able to fly, the young has the bill much shorter than the head, and of a greyish-dusky colour, with the extreme tip yellowish; the feet dusky, but the heel or prominence below the upper tarsal joint, and the soles, dull yellowish; the claws brown, with the margins and lower surface yellowish. The upper part of the head and nape is mottled with black, white, and pale reddish; the fore part of the back, and the scapulars, pale reddish, barred with blackish-brown; the wing-coverts with curved bands of the same; the quills deep grey, edged and tipped with white; the tail-feathers white at the base, then grey, gradually deepening into greyish-black, and tipped with white. The throat, cheeks, lower parts, and a portion of the back, white. The feathers are of a looser texture than in the adult, and those of the occiput and nape are oblong and rounded.

PROGRESS TOWARD MATURITY.—After its first moult, which is finished by the end of September, the young is as follows:—The bill is still shorter than the head, although compressed, much less attenuated, and of a dull greyish-dusky colour, with the edges of the lower mandible yellowish flesh-colour, and the extreme tips yellow. The tongue is livid flesh-colour, and but slightly slit. The feathers are less compact and glossy, and those of the occiput are still rounded. The upper parts of the head and nape are variegated with black and white. The fore part and sides of the neck, with all the lower parts, are pure white; as are the hind-neck and rump, but most of the feathers there have a crescent at the tip. The fore part of the back, the scapulars, and the smaller wing-coverts, are light greyish-blue, with similar black bars; the secondary coverts unspotted, and toward the end white; the secondaries white, with an oblong dark

grey mark toward the end, the primaries and their coverts of a darker grey on the outer and a great part of the inner webs. The tail-feathers pale grey, shaded with darker toward the end, where they are margined with white. The specimen from which I take this description was shot in September.

STERNA HIRUNDO. THE COMMON TERN.

PICTARNE. TARNEY. TARRET. PICKET. SPURRE. SCRAYE. KIRMEW.



FIG. 99.

Sterna Hirundo. Linn. Syst. Nat. I. 227.

Sterna Hirundo. Lath. Ind. Ornith. II. 807.

Greater Tern. Mont. Ornith. Dict. and Suppl.

Hirondelle-de-mer garin. *Sterna Hirundo.* Temm. Man. d'Ornith. II. 740.

Common Tern. *Sterna Hirundo.* Selby, Illustr. Brit. Ornith. II. 468.

Sterna Hirundo. Jenyns. Brit. Vert. Anim. 266.

Sterna Hirundo. Bonap. Comp. List, 61.

Bill about the length of the head, rather slender, coral-red for two-thirds, black at the end; feet light coral-red; tarsus about ten-twelfths long; tail about the same length as the wings. Upper part of the head and nape deep black; back and wings light greyish-blue; sides of head, fore neck, and all the lower parts white, the breast with a slight tinge of bluish-grey.

MALE IN SUMMER.—The body seems very slender, but is anteriorly compact and muscular; the neck rather short; the head of moderate size, oblong. Bill about the same length as the head, rather slender, nearly straight, compressed, tapering, very acute. Upper mandible with the dorsal line slightly arcuato-declinate, the ridge narrowed towards the

end, the sides convex, the edges sharp and inflexed, the tip very acute. Nostrils linear, parallel, basal, pervious; a faint groove and ridge extending obliquely beyond them to the edge of the mandible. Lower mandible with the angle very narrow, the junction of the crura mesial, little prominent, the sides erect and slightly convex, the edges sharp and inflexed, the tip extremely acute.

The eyes rather small, as are the apertures of the ears. Feet very small; tibia bare to a considerable extent; tarsus very short, slender, somewhat compressed, covered anteriorly with small scutella, elsewhere with roundish scales. Hind toe extremely small, the rest very slender, the third longest, the fourth considerably shorter, the membranes with a deeply concave margin. Claws rather long, arcuate, compressed, acute, that of the middle toe very much larger, and having the inner edge dilated.

Plumage close, blended, soft; the feathers broad and rounded. Wings very long, narrow, pointed; primary quills very narrow, tapering, slightly incurved, the first longest; secondaries short, broad, incurved, rounded. Tail long, very deeply forked, the lateral feathers attenuated, the medial short and rounded; the fork rounded. Wings about as long as the tail.

Bill coral-red, black toward the end, but with the tips light yellow. Iris brown; edge of eyelids black. Feet light coral-red; claws brownish-black. Head above, and upper part of hind neck deep black, tinged with greenish-blue. Sides of the head, fore neck, and all the lower parts white, with a faint tinge of greyish-blue on the breast. Back and wings pale greyish-blue; the hind part of the back, upper tail-coverts, and edge of the wings white. Outer web of first quill black, toward the end grey, of the next five hoary-grey, as is a longitudinal band on the inner web, widening toward the end; the other quills like the back, but margined and tipped with white. Tail-feathers with the inner webs white, the outer grey, very pale on the middle feathers, gradually deepening in tint, until on the outer it becomes blackish.

Length to end of tail 16 inches; extent of wings 32; wing from flexure $10\frac{9}{12}$; tail 7; bill along the ridge $1\frac{1}{2}$, along

the edge of lower mandible $2\frac{2}{12}$; tarsus $\frac{10}{12}$; middle toe and claw $1\frac{1}{12}$.

FEMALE.—The female differs externally from the male only in being a little smaller.

Length to end of tail 15 inches; extent of wings 30; wing from flexure 11; bill $1\frac{6}{12}$; tarsus $\frac{10}{12}$; middle toe and claw $1\frac{1}{12}$.

HABITS.—The Common Tern frequents many parts of the coasts of Britain and its islands during summer, and the first half of autumn. It arrives in the south of England in the beginning of May, colonies remaining there, while others proceed along the shores, on both sides of the island. It is stated to be less common on the eastern side, and more plentiful on the southern. There are few extensive tracts of coast, however, on which it is not to be met with. Montagu says it is found in great abundance on part of the Sussex and Kentish coasts, particularly about Winchelsea, and from thence to Dungeness. Mr. Selby has found it breeding abundantly on certain situations in the Solway and the Firth of Clyde. I have met with it in great numbers in Barry, South Uist, and the whole range of the Long Island. Messrs. Baikie and Heddle note its arriving in Orkney annually in May, in considerable numbers, and remaining till the end of August. Dr. Edmondston alleges that it is the only Tern that visits Shetland, while Mr. Dunn says he has never seen any other Tern in Shetland or Orkney than the Arctic. It visits most of the countries of Europe, from the Adriatic to the Baltic; and has been found at Madeira, the Canary Islands, Senegal, and the southern extremity of Africa.

With us the Terns arrive in straggling flocks in the beginning of May, and soon after betake themselves to their breeding-places, which are sandy tracts, gravelly or pebbly ridges on the shore, rocky ground, or sometimes low rocks. In the latter kind of situation, they make an imperfect nest of bits of grass or fragments of dry sea-weeds; but on sand they merely form a depression. The eggs, generally three, sometimes two or four, are about an inch and two-thirds in

length, an inch and two-twelfths in breadth; but they vary much in size, and considerably in form, being roundish-oval, regular oval, oblong-oval, sometimes rather pointed; their ground colour yellowish-grey, pale greenish-brown, greenish-blue, with blotches and spots of brown, sometimes mixed with purplish-grey. The birds usually sit upon them by day, unless in sunny weather, or when they are much disturbed, and always at night, as well as when the air is moist. On going up to a breeding-place, which may always be discovered from a distance, as some of the birds are to be seen flying about it, one is sure to be met by several of them, which hasten to remonstrate with him by harsh cries and threatened blows; as he draws nearer, more of them leave their nests; and at length they are all on wing, wheeling and bounding, now high now low, at times coming quite close, and increasing their cries, which resemble the syllables *cree, cree, cree-ae*.

When walking along the sandy shore—no bird nearer, perhaps, than a quarter of a mile—you may see one or two of them coming up from a distance, increasing their cries as they approach, then wheeling and plunging over and around you, and at length flying off. Proceeding at a moderate height, they stop now and then, hover a moment, dip into the water, and secure a sand-eel or young coal-fish. Many attend on the fishermen or others who are catching sand-eels for bait or food, to pick up those which slip from them disabled. On such occasions they are very vociferous, as they also are when they have fallen in with a shoal of fry. They never dive; but I have often seen them alight on the water and swim a little, and sometimes a whole flock may be observed reposing on the placid bosom of the waters, affording a very pleasing spectacle. They are very bad walkers, but on wing their movements are easy and elegant; they skim along, boundingly, with great speed, ascend or descend, deviate to either side, stop short in an instant, hover in one spot like a hawk, drop, dive, or plunge headlong with surprising adroitness. Their mode of flying, however, does not resemble that of a swallow, and they obtain the popular name of Sea-Swallows rather on account of their forked tail.

In very stormy weather they fly little, but shelter themselves by lying on the shore. When satiated with food, or tired, they rest in the same manner, and, when the young are able to fly, the whole colony often settle at night on some sand-point projecting into the sea, or on an elevated beach. During moonlight their cries may often be heard at night, and sometimes, at low water, they search the shores for sand-eels at that season. When the young have been fed for some time by their parents after leaving the breeding-places, they begin to separate from them, and at length live mostly apart. By the middle of September they have all left our northern coasts, and by the end of that month they have disappeared from the southern. Some individuals occasionally remain during winter in the south of England.

YOUNG.—The young are at first covered with light brownish-yellow down, patched with dark brown. When fledged, they have the bill reddish-yellow at the base, dusky in the rest of its extent; the feet reddish-brown. The forehead brownish-white, the rest of the head and the nape, with the ear-coverts, black; the neck all round and all the lower parts white; the feathers of the back and wings are pale bluish-grey, terminally margined with greyish-brown.

STERNA ARCTICA. THE ARCTIC TERN.

Hirondelle-de-mer arctique. *Sterna arctica*. Temm. Man. d'Orn. II. 742.

Arctic Tern. *Sterna arctica*. Selby, Illustr. Brit. Ornith. II. 473.

Sterna arctica. Jenyns, Brit. Vert. Anim.

Sterna arctica. Bonap. Comp. List, 61.

Bill about the length of the head, slender, vermilion; feet crimson; tarsus about six-twelfths long; tail about half an inch longer than the wings. Upper part of the head and nape deep black; general colour of the plumage pale bluish-grey; upper and lower tail-coverts white.

It is not difficult to distinguish this species from the Common Tern, though they were formerly confounded, and at a little distance seem identical. The bluish colour of the lower parts, the much shorter tarsus, the greater extent of the tail beyond the wings, and the uniform deep red tint of the bill, though the tip is sometimes more or less dusky, are easily-observed characteristics.

MALE IN SUMMER.—The general aspect and proportions are those of the Common Tern. The bill is about the same length as the head, slightly arched, slender, compressed, tapering, very acute. Upper mandible with the dorsal line gently arcuato-declinate, the ridge narrowed towards the end, the sides convex, the edges sharp and inflexed, the tip very acute. Nostrils linear, parallel, basal, pervious, the nasal groove extending beyond them nearly to the tip. Lower mandible with the angle extremely narrow, the junction of the crura mesial, little prominent, the sides erect and slightly convex, the edges sharp and inflexed, the tip extremely acute.

The eyes rather small, as are the apertures of the ears.

Feet very small ; tibia bare to a considerable extent ; tarsus extremely short, roundish, covered anteriorly with small scutella, elsewhere with roundish scales. Hind toe extremely small, the rest slender, the third longest, the fourth not much shorter, the membranes with a concave margin. Claws rather long, arcuate, compressed, acute, that of the middle toe very much larger, and having the inner edge dilated.

Plumage close, blended, soft ; the feathers broad and rounded. Wings very long, narrow, pointed ; primary quills very narrow, tapering, somewhat incurvate, the first longest ; secondaries short, broad, incurved, rounded. Tail long, very deeply forked, the lateral feathers attenuated so as to become nearly filiform, the medial feathers shortish and broadly rounded ; the fork rounded. Wings to half an inch of the end of the tail.

Bill carmine, inclining to vermilion. Iris brown ; edge of eyelids black. Feet deep rich crimson ; claws bluish-black. Head above and upper part of hind-neck deep black, tinged with green. The general colour of the plumage, on the lower as well as the upper parts, is pale bluish-grey ; the upper and lower tail-coverts, the tips of the secondary quills, and the under surface of the wings white. Outer web of first quill black, grey toward the tip, part of inner web along the shaft, outer web and part of inner of all the primaries bluish-grey ; outer web of outer tail-feathers bluish-grey, the rest white.

Length from end of tail $15\frac{1}{2}$ inches ; extent of wings 31 ; wing from flexure $10\frac{1}{2}$; tail $7\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $\frac{7}{12}$; middle toe and claw 1. Another individual :—Length $15\frac{3}{4}$ inches ; extent of wings $29\frac{1}{2}$; bill $1\frac{3}{12}$; tarsus $\frac{6}{12}$; middle toe $1\frac{1}{2}$. Both from the Bass Rock, June, 1824.

FEMALE.—The bill and tail-feathers somewhat shorter ; otherwise no external difference is observable.

Length to end of tail 15 inches ; extent of wings 30.

VARIATIONS.—Slight differences are observed in the tint of the plumage, especially that of the breast, which is some-

times deeper than that of the back, and often with a slight purplish hue. The bill is often more or less dusky at the end.

HABITS.—The Arctic Tern appears on our coasts in the beginning of May. It is very abundant in the outer Hebrides, in Shetland and Orkney, on the northern and eastern coasts of Scotland, on the Isle of May, the Bass Rock, the Fern Islands, and in many other localities; but is unfrequent on the coasts of England. Northward, it extends to Norway, Iceland, and Greenland. Mr. Audubon found it in Labrador; and the arctic voyagers met with it abundantly on the shores of the Frozen Ocean. It is only in the summer season, however, that it frequents these northern tracts, for in autumn it disappears even from our own somewhat temperate seas. M. Temminck supposes it to belong permanently to the north, and to represent the common species in the regions of the arctic circle.

Its habits differ little from those of the Common Tern; but its flight is more bounding, and its cries shriller. Frequently the two species are found mixed at their breeding-places, though they often also keep separate; and in neither case could a person who had not paid considerable attention to them distinguish them with certainty until shot. They nestle on the bare sand, or among small pebbles, in which case a slight hollow receives the eggs; but also on low rocks, or in craggy places, when a kind of nest is often formed of a little dry grass and herbage. The eggs, generally three, sometimes two, rarely four, are scarcely, if at all, distinguishable from those of the Common Tern, though mostly somewhat smaller, measuring about an inch and from five to eight-twelfths in length, and an inch and one or two-twelfths in breadth. They are light yellowish-brown, brownish-yellow, brownish-grey, or pale bluish-green, blotched and spotted with umber-brown. An undoubted specimen in the Edinburgh Museum, brought by Mr Fisher from Parry's second expedition, is broadish-oval, one inch and six-and-a-half-twelfths, by one inch and two-twelfths, pale greyish yellow, irregularly blotched with light umber and very pale purplish-grey.

When its breeding-places are invaded, it evinces great anxiety and petulance, flying up and meeting the intruder, screaming out its creaking cries, hovering and bounding around him, sweeping close to his head, and sometimes, though very rarely, hitting him with its wings. In some localities, the nests are so thickly placed that one must pick his steps to avoid trampling upon them. The young remain in the neighbourhood of their birth-place until they are able to fly, when they accompany their parents to the sandy shores, and are for some time fed by them with sand-eels and other small fishes, which are their common food. Flocks of young birds are often seen by themselves, and are more easily approached than the old Terns.

By the middle of September they have mostly disappeared; but to what coast they direct their flight seems to be quite unknown. They are certainly not arctic residents, as M. Temminck imagines, otherwise we should have them in abundance on our shores all winter. A fact which tends to show that they pass the cold season far south, possibly on the shores of Africa, occurred in the south-west of England in the beginning of May, 1842, when vast numbers were dispersed over a large tract of country which they had not been known to visit before. Mr. Strickland, in the ninth volume of the *Annals and Magazine of Natural History*, states that a flock made its appearance on the 8th May, on the River Avon, in Worcestershire, and that great numbers occurred simultaneously over a large extent of country. The *Bristol Mirror* announced, that "during the high winds that had prevailed, the harbour and floating docks had been visited by large flights. The birds were assembled in such vast numbers, that two or three hundred were killed with stones and other missiles, whilst several were caught alive; and so tame were they, that many were observed to pitch on the backs of passers-by. Flocks of these birds were also observed the same day at Clevedon, Weston, and other places along the Channel coast." The editor adds that "numbers made their appearance at Swansea, Cornwall, and at Bridgewater on the east." Mr. Strickland thinks "we may attribute their unexampled appearance so far inland to the westerly winds

which prevailed on the 7th and 8th, combined with the peculiar funnel-shaped form of the Bristol Channel, which seems to act like the 'pipe' of a decoy pond." As to the persecution which the poor bewildered pilgrims underwent, it is simply a fact in the civilization of England, in the middle of this most humane and wondrously enlightened century.

YOUNG.—The young are at first covered with yellowish-grey down, variegated with brown. When fledged, they have the feathers of the upper parts pale bluish-grey, tipped with pale yellowish-grey, more continuously on the wing-coverts; the hind part of the head and the ear-coverts greyish-black; the lower parts white, but usually more or less tinged with blue on the breast.

STERNA DOUGALLII. MACDOUGALL'S, OR ROSEATE TERN.

Roseate Tern. *Sterna Dougallii*. Mont. Ornith. Dict. Suppl.
Sterna Dougalli. Flem. Brit. Anim. I. 143.
 Hirondelle-de-mer Dougall. Temm. Man. d'Ornith. II. 738.
 Roseate Tern. *Sterna Dougalli*. Selby, Illustr. Brit. Ornith. 470.
Sterna Dougallii. Jenyns, British Vert. Anim. 265.
Sterna Dougalli. Bonap. Comp. List, 61.

Bill rather longer than the head, slender, black, at the base orange-red ; feet vermilion ; wings about three inches shorter than the tail. Upper part of the head and nape deep black ; back and wings light greyish-blue ; sides of head and hind neck white ; all the lower parts of a delicate roseate tint, fading to white.

MALE IN SUMMER.—Of the same form as the last two species, with the tail more elongated. Bill rather longer than the head, slender, nearly straight, compressed, tapering, very acute. Upper mandible with the dorsal line slightly arcuato-declinate, the ridge narrowed toward the end, the sides rapidly sloping, the edges sharp and inflexed, the tip very acute. Nostrils linear-oblong, pervious, a slight groove extending half way beyond them. Lower mandible with the junction of the crura a little beyond the middle, the dorsal line straight, the edges sharp and inflexed, the tip extremely slender.

The eyes rather small, as are the apertures of the ears. Feet very small, tibia bare for about half an inch ; tarsus very short, slender, somewhat compressed, covered anteriorly with small scutella, elsewhere with roundish scales. Hind toe extremely small, the rest very slender, the third longest ; the membranes with a deep concave margin. Claws arcuate.

compressed, acute, that of the middle toe curved in a semi-circle.

Plumage close, blended, soft; the feathers broad and rounded. Wings very long, narrow, pointed; primary quills slightly incurved, the first longest; secondaries short, broad, incurved, rounded. Tail long, very deeply forked, the lateral feathers attenuated, and extending about three inches beyond the tips of the closed wings.

Bill brownish-black, orange-red at the base. Iris brown. Feet vermilion; claws blackish-brown. Head above and upper part of hind neck deep black, tinged with greenish-blue; hind neck and sides of the head white; fore neck and all the lower parts of a pale roseate hue; upper parts pale bluish-grey, hind part of back and tail lighter, almost pure white; the edge of the wings, the tips and inner edges of the quills white, as are their shafts. The outer three primaries greyish-black, with the inner margin white.

Length to end of tail 15 inches; extent of wings 29; wing from flexure $9\frac{1}{4}$; tail $7\frac{1}{2}$; bill along the ridge $1\frac{5}{12}$, along the edge of lower mandible 2; tarsus $\frac{9}{12}$; middle toe $\frac{9}{12}$; its claw $\frac{5}{12}$.

FEMALE.—Not distinguishable as to size or colour from the male.

HABITS.—This very elegant and delicately tinted species was first made known by Montagu, and discovered by Dr. Macdougall of Glasgow, who accompanied the specimen sent with a full description and remarks. It was obtained in July, 1812, on the Cumbrays, two small flat rocky islands in Milford Bay, in the Firth of Clyde, where it was intermixed in very small proportion with the Common Tern. "The new species," Dr. Macdougall states, "was discerned by the comparative shortness of wing, whiteness of plumage, and by the elegance and comparative slowness of motion, sweeping along, or resting in the air almost immovable, like some species of the Hawk, and from the size being considerably less than that of *Sterna hirundo*." Mr. Selby found it breeding in considerable numbers on the Fern Islands. He states that

"it is easily to be distinguished, when on wing, from all the other species, its flight being peculiarly buoyant and sustained by a slower stroke of the pinions. The length of the tail is also characteristic, and its cry is different in expression, resembling the word crake, in a key not unlike that of the Land Crake. It breeds on the outskirts of the station occupied by the Arctic Tern (the prevailing species there); and its eggs much resemble those of that bird, but are a little larger, and with the ground-colour usually more inclining to cream white or pale wood-brown." Mr. Yarrell mentions its occurrence in Cornwall, Devonshire, Shropshire, Lancashire, and Cumberland. I have not met with it anywhere, and, therefore, can only further state that, according to the account given, it feeds upon small fishes, and in its habits resembles the other allied species. Its distribution is said to extend from Lapland and Norway, Germany, and France, to Italy, Madeira, the Cape of Good Hope, and India. Mr. Audubon found it breeding abundantly, in company with the Sandwich Tern, on several of Florida Keys, but never met with it on any part of the eastern coast of the United States, or farther northward.

"The Roseate Tern," he says, "is at all times a noisy, restless bird, and on approaching its breeding-place it incessantly emits its sharp, shrill cries, resembling the syllable crak. Its flight is unsteady and flickering, like that of the Arctic or Lesser Terns, but rather more buoyant and graceful. They would dash at us and be off again with astonishing quickness, making great use of their tail on such occasions. While in search of prey, they carry the bill in the manner of the Common Tern—that is, perpendicularly downward, plunge like a shot, with wings nearly closed, so as to immerse part of the body, and immediately reascend. They were seen dipping in this manner eight or ten times in succession, and each time generally secured a small fish. They usually kept in parties of from ten to twenty, followed the shores of the sand-bars and keys, moving backwards and forwards much in the manner of the Lesser Tern, and wherever a shoal of small fish was found, there they would hover and dash headlong at them for several minutes at a time."

YOUNG.—According to Mr. Selby, the young of the year, in autumn, has the “bill brownish-black, with the base orange-yellow; forehead and crown cream-yellow, tinged with grey; region of the eyes, ear-coverts, and nape of the neck, greyish-black, mixed with yellowish-white; throat, sides of the neck, and under parts white; ridge of wing blackish-grey, with the edges of the feathers paler. Back and wing-coverts bluish-grey, marbled with greyish-black and yellowish-white. Tail having the outer webs of the feathers grey; the inner, and tips, white; quills grey, margined with white; legs pale gall-stone yellow.”

STERNA MINUTA. THE LITTLE TERN.

LESSER SEA-SWALLOW.

Sterna minuta. Linn. Syst. Nat. I. 228.

Sterna minuta. Lath. Ind. Orn. II. 809.

Sterna minuta. Flem. Brit. Anim. 144.

Lesser Tern. Mont. Orn. Dict. and Suppl.

La Petite Hirondelle-de-mer. *Sterna minuta.* Temm. Man. d'Ornith. II. 752.

Lesser Tern. *Sterna minuta.* Selby, Illustr. Brit. Ornith. II. 475.

Sterna minuta. Jenyns, Brit. Vert. Anim. 267.

Bill about the same length as the head, light orange-yellow, with the end black; feet light orange-red; wings an inch longer than the deeply-forked tail. Forehead white; upper part of head, and nape, and loreal spaces black; back and wings very pale bluish-grey; lower parts white; outer two quills greyish-black, with the inner margin white.

MALE IN SUMMER.—This, the smallest of our Terns, and easily distinguishable from the other species, has the bill slightly longer than the head, slender, nearly straight, much compressed, tapering, extremely acute; the upper mandible with its dorsal line very slightly arched, the ridge gradually narrowed to the end, the sides little convex, the edges sharp and somewhat inflexed, the tip very slender; the nostrils linear, parallel, basal, pervious; the lower mandible with the angle very narrow, the junction of the crura mesial, a little prominent, the sides erect and slightly convex, the edges sharp and inflexed, the tip very slender.

The eyes rather small, as are the apertures of the ears. Feet very small; tibia bare for a small space; tarsus about seven-twelfths long, covered anteriorly with small scutella,

elsewhere with reticular scales; two small membranes with a deep concave margin; claws not much arched, very acute.

Plumage soft, blended; the feathers broad and rounded. Wings very long, narrow, and pointed; primary quills tapering, the outer slightly incurvate; secondaries short, broad, incurved. Tail rather long, very deeply forked, the lateral feathers attenuated, the medial short and rounded. Wings about an inch longer than the tail.

Bill light orange, the tips black for a third of an inch. Eyes brown. Feet orange, claws black. A white triangular space on the forehead, extending over the eyes; two black loreal bands; upper part of the head and nape black. Hind neck, back, and wings, light greyish-blue; hind part of back and tail white. Outer two primary quills greyish-black, their inner webs with a broad white margin, unless toward the end.

Length to end of tail 10 inches; extent of wings 21; bill along the ridge $1\frac{4}{12}$; tarsus $\frac{8}{12}$; middle toe $\frac{6}{12}$; its claw nearly $\frac{4}{12}$.

FEMALE.—The female is similar to the male, but somewhat less.

Length 9 inches; extent of wings 20; bill $1\frac{2}{12}$.

HABITS.—This species arrives in the beginning of May, and settles here and there along the sandy shores, from the south of England to the Orkney Islands. Many localities are mentioned on the east coast; but very few on the west. Sir William Jardine mentions one on the Solway at Skinburness. There are several on the Firth of Forth, and not a few on the east coast of the middle division of Scotland: as the sands of Barry near Dundee, a place three miles north of the mouth of the Don, another near the mouth of the Ythan, the sands near the Loch of Strathbeg, and those between Burrehead and Findhorn. Its habits are, in a general sense, much the same as those of the Arctic and Common Terns. I cannot give a better account of them than the following, which I extract from an unpublished work:—

“Aberdeen, Saturday, 16th June, 1849.—In the elegance

of its buoyant flight as it skims over the waters, or shoots along on its way to and from its breeding-place, the tiny creature must be an object of admiration to every lover of nature. You may see a pair coming up from a distance, flying at the height of a few yards over the waves, their long wings winnowing the air, and impelling them in starts, as it were, as they wend their way in undulating and wavering movements. Suddenly their flight is arrested over a large pool left on the sands by the retiring tide; with quick beats of their wings, they hover stationary, or but slightly shifting place, and with downward-pointed bill seem intent on something which they perceive in the water. One drops, but not like a stone, dips, but with upraised wings, and rises with a small fish in its bill. The other is similarly successful. Onward they proceed, now and then emitting a shrill cry, and with gentle beats of their wings. Far a-head is a flock engaged in picking up their prey, and onward they speed to join their kindred. At many miles distance from their breeding-places they may be met with, and yet they generally do not wander very far, as they can procure an abundant supply of food along the sands. Sometimes they may be seen sitting on the smooth water, and occasionally resting on the sands.

“Saturday being a field day, I walked with some students along the links to Tarbathie Hill, and thence to the mouth of Mill-den Burn. Two of my pupils had gone before to procure some Terns and their eggs, and when we reached the place where we found them engaged in shooting, we terminated our botanical excursion. At the mouth of the Burn is a flat recess in the sands, the banks retiring to some distance from the general line of the coast, and there, in spots where the little heaps of dried sea-weed had collected the sand about them, the colony had settled. It was the Last Days of Pompeii with the poor birds. Their settlement had been robbed in the morning by some boys, and they were flying high overhead, emitting their shrill and creaking cries loud enough to be heard at the distance of six or eight hundred yards. Although the birds kept at a great height, one of the gunners had shot a pair of them before we arrived. Many

other shots were fired, and four of them by myself, but no more were obtained. In the mean time, the students searched the sands, and discovered about a dozen nests which had not been plundered. The nests were simply a shallow cavity in the sand, and all of them contained two eggs excepting one, in which there was exactly half that number. All round them were footmarks of the birds, which seem capable of walking pretty well, as sometimes the tracts could be traced for many yards. The eggs are very large for the size of the bird, rather broadly ovate, but somewhat pointed, of a delicate pale yellowish-grey colour, irregularly blotched, spotted, and dotted with blackish-brown and pale purplish-grey. One of them measures in length one inch four-twelfths and a quarter, in breadth ten-twelfths and a half; another one inch three-twelfths in length, eleven-twelfths and three-fourths in breadth. The birds shot happened to be male and female, both very perfect specimens.

“Extremely beautiful they are, with their pure unsullied plumage. The bill, which seems rather long in proportion, is slender, slightly arcuate, much compressed, and tapering to an extremely attenuated point; its colour light orange, the tips of both mandibles black, the upper to the extent of 4”, the lower less. The little delicate feet, of which a small portion of the tibia is naked, and the webs with a concave outline—that between the third and fourth toes much larger—are of a pure orange; the long arcuate, extremely slender, and finely-pointed claws black, with a greyish-blue tinge at the base. On the forehead is a triangular pure white space, its two hinder angles prolonged over the eyes; it is separated on each side from the white, along the basal edge of the mandible, by a narrow band of deep black, continuous behind the eyes with the pure black of the head and nape. The upper parts of the body and wings are of a very delicate greyish-blue, excepting the hind part of the back and the tail, which are pure white, the outer two primary coverts, which are black, and the outer webs, shafts, and nearly half of the inner webs of the outer two primary quills, with the basal portion of the shaft of the third quill, which are greyish-black. The whole under surface is of the purest snow-white, only the

dark hue of the longer quills appears of a softened or greyish tint.

“The female has the bill shorter, more slender, of a paler tint, with rather less of the tip black; the feet of a paler orange, approaching to flesh-colour; but in other respects is precisely similar, only of smaller size.

“MALE.—Length 10 inches; extent of wings $21\frac{1}{2}$; bill $1\frac{4}{12}$, along the gape $1\frac{9}{12}$; wing from flexure $7\frac{4}{12}$, extending 1 inch beyond the tip of the longest tail-feather, which is $1\frac{8}{12}$ longer than the shortest; tarsus $7\frac{1}{2}$; middle toe $\frac{6}{12}$, its claw $\frac{4}{12}$.

“FEMALE.—Length $9\frac{2}{12}$; extent of wings 20; bill $1\frac{2}{12}$; lateral tail-feathers $1\frac{2}{12}$ longer than the medial.”

The colony had resorted to this place for many years, and in 1841, when I visited it, numbered about two hundred individuals; but the annual abstraction of the eggs by herd-boys, and the complete “herrying” of 1849, induced them to remove. They have now settled on the sands near Ythan mouth, about ten miles farther north.

YOUNG.—The young, when fledged, have the bill pale yellow, its tip blackish-brown; the feet pale reddish-yellow; the forehead yellowish-white, the upper and hind parts of the head pale brown, the latter with blackish-grey markings; the back and wings yellowish-brown, the feathers bordered with blackish-grey; the tail-feathers white at the base, becoming pale yellowish-brown at the end; the lower parts white.

HYDROCHELIDON. MARSH-TERN.

SOME small Terns, differing from the rest chiefly in having the tail less forked, and in preferring fresh water marshes to the shores of the sea, have been separated to form a generic group, to which Boie and the Prince of Canino give the name of Hydrochelidon. Mr. Stephens, adopting Dr. Leach's name *Viralva*, had also proposed to form a genus of the same materials. Not finding that the species referred to presents such differences in the bill or feet, or even in the wings or tail, as could fully justify a distinction of this kind, I admit the genus only with doubt, and am unable to define it with precision.

Bill as long as the head, slender, nearly straight, compressed, very acute ; feet small ; interdigital membranes deeply emarginate ; wings very long, narrow, and pointed ; tail of moderate length, emarginate, of twelve rounded feathers.

They frequent marshes ; feed on insects as well as small fishes ; and have a very rapid and gliding flight.

HYDROCHELIDON NIGRA. THE BLACK MARSH-TERN.

BLACK TERN. BLUE DARR. CAR SWALLOW.

Sterna nigra. Linn. Syst. Nat. I. 227.

Sterna fassipes. Linn. Syst. Nat. I. 228.

Sterna nigra, and *St. fassipes.* Lath. Ind. Ornith. II. 810.

Black Tern. Mont. Ornith. Dict. and Suppl.

Hirondelle-de-mer épouvantail. Temm. Man. d'Ornith. II. 749.

Black Tern. *Sterna nigra.* Selb. Illustr. Brit. Ornith. II. 477.

Sterna nigra. Jen. Brit. Vert. Anim. 268.

Hydrochelidon nigra. Bonap. Comp. List.

Bill black ; feet dark reddish-brown ; tail emarginate, about two inches shorter than the wings ; head, neck, breast, and abdomen greyish-black ; upper parts dark bluish-grey.

MALE IN SUMMER.—Of slender form, with the neck rather short ; the head of moderate size, oblong. Bill about the length of the head, slender, nearly straight, compressed, tapering, very acute. Upper mandible with the dorsal line slightly arched, the ridge gradually narrowed, the sides slightly convex, the edges sharp, the tip attenuated. Nostrils basal, linear, direct, pervious. Lower mandible with the angle very narrow, the junction of the crura a little beyond the middle, the sides erect, the edges sharp and slightly inflexed, the tip extremely attenuated.

Eyes rather small, as are the apertures of the ears. Feet small ; tibia bare for a short space ; tarsus eight-twelfths long, anteriorly scutellate ; toes very slender, the anterior connected by short membranes, having a concave margin. Claws long, slender, arched, compressed, acute.

Plumage blended, soft. Wings very long, narrow, pointed ; primary quills tapering, the outer slightly incur-

vate ; secondary quills short, broad, incurved, rounded. Tail of moderate length, emarginate ; the lateral feathers rounded, as well as the rest.

Bill brownish-black. Feet dark reddish-brown ; claws black. Head, neck, breast, and abdomen, greyish-black ; lower wing-coverts bluish-grey ; lower tail-coverts white ; upper parts dark bluish-grey ; outer web of the outer quill greyish-black.

Length to end of tail $11\frac{1}{2}$ inches ; wing from flexure 9 ; tail $3\frac{1}{2}$; bill along the ridge $1\frac{2}{12}$; along the edge of lower mandible $1\frac{6}{12}$; tarsus $\frac{8}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{6}{12}$.

FEMALE.—The female somewhat less, but otherwise like the male.

HABITS.—This species is represented by authors as of very extensive distribution, it having been found in Sweden, Germany, Holland, Switzerland, France, Italy, the Caucasus, Madeira, and the United States of America. It resides in marshes, and on the margins of lakes and rivers, and, according to M. Temminck, is very numerous in Holland, and the great marshes of Hungary. In England it appears to have been much more plentiful than it now is, some of its principal breeding-places having been entirely deserted. It is still, however, found in Kent, Lincolnshire, and occasionally in other counties of England. It is mentioned in the Statistical Account of Forfarshire as occurring in the Montrose Basin ; but I am not aware of any other locality in Scotland, although Mr. Edward informs me he saw two Black Terns at Banff, which may have been of this species.

It arrives in the beginning of May, and departs about the end of September. It is said to feed on insects and worms, as well as fishes. According to Montagu, "the flight of the Black Tern is not very unlike that of the Goatsucker ; its evolutions are rapid, and its turns short, by which means it sometimes escapes the talons of predaceous birds, as we had once an opportunity of witnessing. In a very hard gale of wind many Terns were sporting over the water, when a Peregrine Falcon passed like a shot, singled out his bird, and presently

coming up with the chase, made a pounce, but the great dexterity of the Tern avoided the deadly stroke, and took a new direction. The Falcon, by his superior velocity, soon regained sufficient elevation, to successively repeat his pounces, but at last relinquished the pursuit." About the middle of May this species prepares a nest of flags or broad grass in the most marshy places, upon a tuft just above the surface of the water, and lays almost invariably four eggs, weighing about three drachms each. Mr. Yarrell describes them as of a dark olive-brown, blotched and spotted with black, principally at the larger end ; the length one inch five lines, by one inch in breadth.

YOUNG.—“ The forehead, loreal spaces, sides and fore part of the neck, as well as all the lower parts, pure white ; a large blackish-grey spot on the sides of the breast ; a crescent of the same before the eyes ; top of the head, occiput, and nape, black ; back and scapulars brown, bordered and terminated with reddish-white ; wings, rump, and tail, ash-grey ; the coverts tipped with reddish-white ; bill brown at its base ; iris brown ; feet livid brown.”—TEMMINCK.

HYDROCHELIDON LEUCOPTERA. THE WHITE-WINGED MARSH-TERN.

Hirondelle-de-mer, leucoptère. Sterna leucoptera. Temm. Man. d'Ornith. II. 747.

White-winged Black Tern. Sterna leucoptera. Yarr. Brit. Birds. Suppl. 50.

Bill reddish-brown ; feet coral-red ; tail emarginate, about two inches and a half shorter than the wings. Head, neck, fore part of back, breast, and abdomen black ; upper wing-coverts, rump, tail and its coverts white.

MALE IN SUMMER.—“Head, neck, fore part of back, breast, belly, and lower wing-coverts deep black ; hind part of back and scapulars greyish-black ; small and middle wing-coverts, rump, tail-feathers, and upper and lower tail-coverts pure white ; large wing-coverts and secondary quills bluish-grey ; on the inner webs of the first two quills is a broad pure white longitudinal band ; iris black ; feet coral-red. Length about ten inches.”—TEMMINCK.

FEMALE.—The female is similar to the male.

HABITS.—This species, according to M. Temminck, “inhabits the bays and gulfs of the shores of the Mediterranean ; is very common about Gibraltar ; visits also the lakes, rivers, and marshes of the countries beyond the Alps ; is very common on the lakes Lucarno, Lugano, Como, Isco, and Guarda ; and is seen occasionally on the lake of Geneva ; but never in Holland, or in the north.” Brehm and Nilsson, however, include it among the birds of Germany and Scandinavia. It is said to feed chiefly on aquatic insects and worms, especially dragon-flies, moths, and other winged insects, seldom on fishes.

In the Annals of Natural History, vol. XV. p. 271, Mr. Frederick M'Coy has given an account of a specimen shot by J. Hill, Esq., on the Shannon, in 1841, in company with the Black Tern, with which it was confounded. The specimen, which is preserved in the Museum of the Natural History Society of Dublin, is thus described:—

“Measurement.—Total length to extremity of tail about eight inches; bill from base ten lines and a half, from rictus one inch five lines; greatest depth of both mandibles two lines and a half; middle toe, including the claw, eleven lines in length; tarsus eight lines; naked portion of the tibia four lines.

“Colours.—Legs and feet in the preserved specimen pale yellow, probably red in the living bird, claws darker; bill dark blackish-brown; head, neck, breast, abdomen, under wing-coverts, and back deep glossy black; small wing-coverts, tail, and upper and under tail-coverts pure white; first three quill-feathers black, with a broad longitudinal band of white on the inner webs; remainder of the wings ash-grey, becoming darker towards the body.

“The form, proportions, and size of this species are very nearly those of the Black Tern, *Sterna nigra*. Like that species, too, the webs of the toes are very deeply indented, being reduced to a mere rudiment between the middle and inner toes. The two species are, however, easily distinguished. The under wing-coverts of the *S. nigra* are white, of the *S. leucoptera* black; the tail of the former is dark grey, of the latter pure white; in the *S. nigra* the throat is white, breast and abdomen dark grey, and the back lead-colour; while in the *S. leucoptera* all those parts are black.”

HYDROCHELIDON LEUCOPAREIA. THE WHISKERED MARSH-TERN.

WHISKERED TERN.

Hirondelle-de-mer moustac. *Sterna leucopareia*. Temm. Man. d'Ornith.
II. 746.

Whiskered Tern. Yarr. Brit. Birds, III. 404.

Bill rather stout, and, with the feet, red; tail emarginate, about two inches shorter than the wings. Upper part of head black; a white band from the bill under each eye; back, wings, and tail deep leaden-grey; lower parts grey, becoming darker on the sides and abdomen.

MALE IN SUMMER.—“Upper part of the head and nape deep black; a pure white band from the base of the bill, beneath the eyes, to the ear-coverts; throat of a greyish-white, shaded into pure grey on the breast, and into blackish-grey on the belly and sides; all the upper parts, the wings and tail, of a uniform deep grey; inner wing-coverts, and upper and lower tail-coverts, pure white; bill and feet bright red.”
—TEMMINCK.

FEMALE.—Similar to the male.

IN WINTER.—“The forehead, crown of the head, occiput, neck, and all the lower parts pure white; a black spot behind the eyes; back, wings, quills, and tail of a uniform ash-grey; bill and feet deep lake-red; iris black.”—TEMMINCK.

HABITS.—M. Temminck states that this species was discovered by M. Natterer, of Vienna, in one of the southern

parts of Hungary, and is not uncommon in the great marshes of the eastern parts of the south of Europe. M. de la Motte, of Belleville, he says, once saw several individuals in a marsh on the coast of Picardy, and shot three of them. It is said to feed on aquatic insects and worms, never on fishes. Mr. Yarrell introduced it to the British Fauna, a specimen shot at Lyme, in 1836, having been sent to him by T. C. Heysham, Esq., of Carlisle. He thus describes it :—

“The bill is red, inclining to dark brown on the edges of both mandibles towards the point ; the bill rather stout, with the inferior angle of the under mandible prominent, an approximation to the form of the under mandible in the Gull-billed Tern, next to be described. The irides brownish-black ; forehead, crown, and nape black ; from the base of the upper mandible, in a line below the eye to the ear-coverts, a stripe of white, forming the whisker or moustache ; back, wing-coverts, upper tail-coverts, and tail-feathers, uniform dark grey, almost slate-grey ; first quill-feather lead-grey on the outer web, and over a considerable portion of that part of the inner web nearest to the white shaft, the other part of the inner web white ; the outer webs of the other primary and secondary feathers lighter grey than the inner webs ; chin and throat greyish-white ; neck and breast slate-grey, and as dark as the back ; abdomen, thighs, and flanks lead-grey ; under wing and tail-coverts white ; legs, toes, and membranes red, the membranes deeply indented.”

Bill along the ridge $1\frac{1}{8}$ inch ; length $11\frac{1}{2}$; outer tail-feathers exceeding the medial by 1 ; wing from flexure $9\frac{1}{4}$; tarsus $\frac{7}{8}$; middle toe $\frac{3}{4}$, its claw $\frac{3}{8}$.

GELOCHELIDON. GULL-BILLED TERN.

THE only species of this genus with which I am acquainted differs from the Terns and Marsh-Terns in having the bill stouter, rather shorter, with a greater, though still slight, prominence on the lower mandible, and not very widely different in form from that of some species of *Gavia*, the genus of *Larinæ* that approaches nearest to the *Sterninæ*. The tail is only emarginate or but slightly forked, and its lateral feathers are rounded like the rest. Although the feet are short, they are proportionally longer than in most of the other genera; the middle toe, with its claw, longer than the tarsus. The digestive organs are the same as in the Terns. In other respects there are no palpable differences between them; and this so-called genus, *Gelochelidon*, though proposed by the Prince of Musignano, is not generally adopted.

GELOCHELIDON ANGLICA. THE MARSH GULL-BILLED TERN.

Gull-billed Tern. *Sterna Anglica*. Mont. Ornith. Dict. and Suppl.

Sterna Anglica. Flem. Brit. Anim. 143.

Hirondelle-de-mer Hansel. *Sterna Anglica*. Temm. Man. d'Ornith. II. 744 ; IV. 462.

Gull-billed Tern. *Sterna Anglica*. Selby, Illustr. Brit. Ornith. II. 480.

Sterna Anglica. Jenyns, Brit. Vert. Anim. 269.

Marsh or Gull-billed Tern. *Sterna Anglica*. Audub. Orn. Biogr. V. 127.

Bill and feet black ; hind claw straight. In summer, the upper part of the head black, its sides, the fore-neck, and all the lower parts white ; the upper parts pale greyish-blue. In winter, the forehead and top of the head white, a black crescent before the eyes, and a spot of the same behind them.

MALE IN SUMMER.—The Gull-billed Tern being of very rare occurrence in England, I am obliged to describe it from American specimens supplied by Mr. Audubon. It is of the ordinary form of the larger Terns, having the body slender, the neck of moderate length, the head ovato-oblong. The bill about the length of the head, rather stout, compressed, acute. Upper mandible with the dorsal line straight for half its length, then arcuato-declinate, the ridge rather broad and convex, gradually narrowed to the end, the sides convex, the edges sharp and inflexed, the tip slender, but slightly obtuse ; nasal groove nearly half the length of the bill ; lower mandible with the angle very narrow, the junction of the crura beyond the middle considerably prominent, the dorsal line ascending, straight, the sides erect and slightly convex, the edges sharp, the tip acute.

Nostrils sub-basal, oblong, direct, pervious. Eyes of moderate size. Feet small ; tibia bare for nearly half an

inch ; tarsus short, anteriorly scutellate ; toes slender, the first extremely small, the third longest, the fourth considerably shorter ; interdigital membranes emarginate, the inner more deeply ; claws little arched, compressed, very slender, that of the middle toe much larger, and having its inner edge thin and dilated.

Plumage soft, blended. Wings very long, narrow, pointed ; primary quills tapering to an obtuse point ; secondary short, incurvate, obliquely rounded, the inner web projecting beyond the outer. Tail of moderate length, forked, the lateral feathers tapering to a narrow, but obtuse point.

Bill and feet black. Upper part of the head and part of the hind-neck deep black ; sides of the head and a line margining the base of the upper mandible, fore-neck, and all the lower parts white ; upper parts pale greyish-blue ; the tail of a paler tint, its outer feathers nearly white ; primary quills hoary on the outer web, deep grey on the inner, lighter toward the base.

Length to end of tail $14\frac{1}{2}$ inches ; extent of wings 34 ; wing from flexure 12 ; tail 5 ; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $2\frac{2}{12}$; tarsus $1\frac{1}{4}$; middle toe $1\frac{1}{2}$, its claw $\frac{4}{12}$.

FEMALE.—The female is similar to the male, and scarcely differs in size.

HABITS.—This species, which was first distinguished and characterized by Montagu, from specimens obtained on the coast of Sussex, has only in a very few instances been found in England, where there have thus been few or no opportunities of observing its habits. It is said by M. Temminck and others to inhabit marshes and the borders of lakes ; to be common in Hungary and the confines of Turkey ; and to have been met with in various parts of Europe, in India and its islands, as well as in America, from Brazil to the southern United States. The ornithologists of the latter country have given the best account of its habits. Mr. Audubon's statement, some particulars omitted, is as follows :—

“The Marsh Tern is pretty abundant about the salt

marshes of the mouths of the Mississippi in the beginning of April ; and by following the shores of the Gulf of Mexico, you will find that it comes to us from beyond the Texas, as many make their appearance along that coast in a straggling manner during spring, there being seldom more than a dozen together, and generally only two. Their journeys are performed over the waters of the sea, a few hundred yards from the shore ; and when in want of food they diverge from their ordinary course, and ranging over the land satisfy their hunger, when they resume their route.

“ Excepting the Cayenne Tern, I know no American species that has so powerful a flight as the present. To this power is added an elegant lightness, that renders it most conspicuous and pleasing during the love season. It swims buoyantly, but not swiftly. Whilst travelling or inspecting the pools of the marshes, or the bayous intersecting them, it passes at a considerable height with quickly repeated movements of the wings ; and when looking for food, it darts through the air and slides towards the waters, as if about to dive for fish. I have observed them coming over large mud-flats and marshes to bayous ; but I believe that these birds never immerse themselves in the water, as other Terns are wont to do ; nor do I think that they procure fish, as, on examining a number of individuals near the mouths of the Mississippi, in the Texas, and at Great Egg Harbour, I never found any other food in their stomachs than insects of various kinds, including coleoptera, which were unknown to me. In many instances, when near the places first mentioned, my friend Edward Harris and myself saw them catching insects on wing over a small pond of almost putrid water, the surface of which was entirely covered with a thick green layer of water-plants. The same manner of procuring food was observed over the dry land at Barataria, where they seized insects by diving as it were close to the ground, and again rising to a considerable height. Their plunges were performed with great velocity, generally by the males and females alternately. In two or three instances, I have seen some of these birds plunge towards the water at sea, but always close on shore ; and have supposed that when insects

are scarce on the land, particularly during their migration southward, they may be forced to feed upon fish.

“The Marsh Tern deposits its three eggs on the dried rushes found in the salt marshes at a short distance from the water, and carefully placed beyond reach of any ordinary encroachments of the tides; for, as Wilson has truly said, this species forms no nest. The eggs differ considerably in their markings. They are generally an inch and three-quarters in length, an inch and half-an-eighth in breadth, smooth, of a greenish or olivaceous tint, largely marked with irregular splashes of dark umber, almost black, disposed around the broader part, leaving the apex with only a few small dots of the same colour, similar dots being as sparingly dispersed toward the smaller end, which falls off toward the extremity, and is there gently rounded. The parents sit more upon them than is usual with Terns which drop their eggs on the sands, and they do not leave their charge in cloudy weather. The young have the bill of a dull reddish orange-brown colour, which is retained by them until late in the winter, when these parts become black, and so continue for life.”

YOUNG.—According to M. Temminck, the young have the upper part of the head white, with very small longitudinal spots; the bluish-grey tints on the back and wings mixed with brown, cinereous, and pale yellowish; the tail very little forked, cinereous, with the tips of the feathers white; quills brownish-grey; all the lower parts pure white; base of the bill yellowish, the rest toward the point blackish-brown; feet brown.

MEGALOPTERUS. NODDY.

THE Noddies differ from the Terns in nothing very essential, although they are readily distinguished by their dusky colour, graduated tail, and less attenuated wings. The bill is somewhat longer than the head, slender, but rather strong, nearly straight, compressed, very acute; the upper mandible with the dorsal line straight for half its length, then gently arcuato-declinate, the sides convex, the edges sharp and inflexed, the tip acute; the nasal grooves extending to beyond the middle; the lower mandible narrow, with the angle very narrow, the junction of the crura beyond the middle, the dorsal line ascending and slightly concave, the edges sharp and inflexed, the tip attenuated.

The mouth of moderate width; the tongue very slender, tapering to a horny point. The œsophagus very wide, much dilated at its lower part; the stomach very small, moderately muscular, with dense and longitudinally rugous epithelium; intestine of moderate length, narrow, with very small cœca.

Nostrils sub-medial, linear oblong, rather large, pervious. Eyes of moderate size, as are the apertures of the ears. Feet very short; tibia bare to a small extent; tarsus very short, roundish, with broad but short scutella; toes slender, the first very small, the third a little longer than the fourth; the interdigital membranes full, the inner slightly concave; claws arcuate, compressed, acute, that of the third toe proportionally larger.

Plumage soft, close, blended. Wings very long, narrow, pointed; the primary quills tapering to a rounded tip. Tail long, graduated, of twelve soft, tapering, obtuse feathers.

These birds, remarkable for the gliding buoyancy and extent of their flight, abound in the warmer parts of the Atlantic and Pacific Oceans. Their habits are in general

similar to those of the Terns. Some ornithologists adopt for them the generic name *Anoüs*, proposed by Dr. Leach ; while others include them in the extended genus *Sterna*. They are the most oceanic of the family, seeking their food at vast distances from land, and seizing it while they skim along the surface, or sometimes when swimming.

MEGALOPTERUS STOLIDUS. THE COMMON NODDY.

NODDY.



FIG. 100.

Sterna stolidus. Linn. Syst. Nat. I. 227.

Sterna stolidus. Lath. Ind. Ornith. II. 805.

Sterna stolidus. Jen. Brit. Vert. Anim. 270.

Hirondelle-de-mer Noddy. *Sterna stolidus*. Temm. Man. d'Ornith. IV. 461.

Noddy Tern. Yarr. Brit. Birds, III. 417.

Bill rather stout; plumage sooty-brown; primary quills and tail-feathers brownish-black; upper part of the head pale ash-grey; a black spot before the eye.

MALE IN SUMMER.—Of a slender, elongated form, with the neck rather short; the head oblong. The bill rather longer than the head, strong, nearly straight, compressed, very acute; the dorsal line of the upper mandible arcuato-declinate beyond the middle, that of the lower commencing beyond the middle, ascending, slightly concave; the edges of both sharp and inflexed, the tips acute.

The mouth rather wide. Tongue an inch and a quarter

long, very slender, tapering to the point, which is horny. Oesophagus extremely thin, two-thirds of an inch wide, dilated within the thorax to an inch and two-twelfths; its length four inches and a half. The stomach small, being only ten-twelfths long, and eight-twelfths in breadth, thin, with strong, longitudinally rugous bright-red epithelium. Intestine thirteen inches and a half long, narrow, from three-twelfths to a twelfth and a half in breadth; cæca very small, being two-twelfths and a half in length, and about half a twelfth in breadth; cloaca large, ovate.

Nostrils linear-oblong, pervious, four-twelfths long, their anterior extremity about the middle of the length of the bill, the groove continued to the edge about half way to the tip. Legs very short; tibia bare for half an inch; tarsus with seventeen transversely elongated scutella; anterior toes longer than the tarsus, their webs full, but the inner with a concave margin; claws, moderate, arched, compressed, acute, that of the middle toe with a thin dilated inner edge.

Plumage soft and blended, the feathers broad and rounded, with small plumules. Wings very long, narrow, and pointed; primary quills tapering, but rounded, the first longest; secondaries short, broad, incurvate, obliquely tipped, the inner web extending beyond the outer. Tail long, cuneate, of twelve tapering, obtuse feathers.

Bill black. "Iris brown." Feet dull reddish-brown, the webs dusky, the claws black. The general colour of the plumage is sooty-brown, becoming blackish-brown on the tail and primary quills, which in some lights are glossed with purple. The upper part of the head anteriorly white, shaded behind into ash-grey; the sides of the head, the throat, and part of the neck, strongly tinged with grey; a triangular greyish-black spot before the eye, a very small spot of the same behind.

Length to end of tail 16 inches; extent of wings 33; wing from flexure $11\frac{1}{4}$; tail $5\frac{1}{2}$; bill along the ridge $1\frac{7}{12}$, along the edge of lower mandible $2\frac{4}{12}$; tarsus $1\frac{9}{12}$; middle toe $1\frac{2}{12}$, its claw $\frac{4}{12}$.

FEMALE.—Similar to the male.

HABITS.—A very good account of the breeding habits of this bird is that given by Mr. Audubon, from whom I obtained the specimens which have supplied the above description. “About the beginning of May, the Noddies collect from all parts of the Gulf of Mexico and coasts of Florida, for the purpose of returning to their breeding-places, on one of the Tortugas called Noddy Key. They form regular nests of twigs and dry grass, which they place on the bushes and low trees, but never on the ground. On visiting their island on the 11th of May 1832, I was surprised to see that many of them were repairing and augmenting nests that had remained through the winter, while others were employed in constructing new ones, and some were already sitting on their eggs. In a great many instances, the repaired nests formed masses nearly two feet in height, and yet all of them had only

slight hollow for the eggs, broken shells of which were found among the entire ones, as if they had been purposely placed there. The birds did not discontinue their labours, although there were nine or ten of us walking among the bushes; and when we had gone a few yards into the thicket, thousands of them flew quite low over us, some at times coming so close as to enable us to catch a few of them with the hand. On one side might be seen a Noddy carrying a stick in its bill, or a bird picking up something from the ground to add to its nest; on the other, several were seen sitting on their eggs, unconscious of danger, while their mates brought them food. The greater part rose on wing as we advanced, but re-alighted as soon as we had passed. The bushes were rarely taller than ourselves, so that we could easily see the eggs in the nests. This was quite a new sight to me, and not less pleasing than unexpected.

“The Noddy, like most other species of Terns, lays three eggs, which average two inches in length, by an inch and three-eighths in breadth, and are of a reddish-yellow colour, spotted and patched with dull red and faint purple. They afford excellent eating, and our sailors seldom failed to collect bucketfuls of them daily during our stay at the Tortugas. The wreckers assured me that the young birds remained along with the old through the winter, in which respect the Noddy,

if this account be correct, differs from the other species, the young of which keep by themselves until spring.

“At the approach of a boat, the Noddies never flew off their island, in the manner of the Sooty Terns. They appeared to go farther out to sea than those birds, in search of their food, which consists of fishes mostly caught amid the floating sea-weeds, these Terns seizing them, not by plunging perpendicularly downwards, as other species do, but by skimming close over the surface, in the manner of Gulls, and also by alighting and swimming around the edges of the weeds. This I had abundant opportunities of seeing while on the Gulf of Mexico.

“The flight of this bird greatly resembles that of the Night Hawk when passing over meadows or rivers. When about to alight on the water, the Noddy keeps its wings extended upwards, and touches it first with its feet. It swims with considerable buoyancy and grace, and at times immerses its head to seize on a fish. It does not see well by night, and it is perhaps for this reason that it frequently alights on the spars of vessels, where it sleeps so sound that the seamen often catch them. When seized in the hand, it utters a rough cry, not unlike that of a young American Crow taken from the nest. On such occasions, it does not disgorge its food, like the Cayenne Tern and other species, although it bites severely with quickly repeated movements of the bill, which, on missing the object aimed at, snaps like that of our large Fly-catchers. Some which I kept several days refused all kinds of food, became dull, and languid, and at length died.

“While hovering over or near their nests, these birds emitted a low querulous murmur, and, if unmolested, would attempt to alight on our heads. After a few visits, however, they became rather more careful of themselves, although the sitting birds often suffered us to put a hat over them. Like the Sooty Tern, this species incubates both day and night.”

Mr. Nuttall also gives an excellent description of its habits : —“Familiar to mariners who navigate in the equatorial regions, the Noddy, like the voyager, frequents the open seas to the distance of some hundreds of leagues from the land, and with many other birds of similar appetites and propensi-

ties, they are seen in great flights, assiduously following the shoals of their finny prey. They pursue them by flying near the surface of the water, and may now be seen continually dropping on the small fish, which approach the surface to shun the persecution of the greater kinds, by which they are also harassed. A rippling and silvery whiteness in the water marks the course of the timid and tumultuous shoals; and the whole air resounds with the clangour of these gluttonous and greedy birds, who, exulting or contending for success, fill the air with their varied but discordant cries. Where the strongest rippling appears, there the thickest swarms of Noddies and sea-fowl are uniformly assembled. They frequently fly on board of ships at sea, and are so stupid or indolent on such occasions as to allow themselves to be taken from the yards on which they settle; they sometimes, however, when seized, bite and scratch with great resolution, leading one to imagine that they are disabled often from flight by excessive fatigue or hunger. Some have imagined that the appearance of the Noddy at sea indicates the proximity of land; but in the manner of the Common Tern they adventure out to sea, and, like the mariner himself, the shelter of whose friendly vessel they seek, they often voyage at random for several days at a time, committing themselves to the mercy of the boundless ocean, and having at certain seasons no predilection for places, where the climate suits, the roving flocks or stragglers find equally a home on every coast, shoal, or island."

Individuals, it is stated, occasionally appear in St. George's Channel; and in the summer of 1840, as recorded by Mr. Thompson, two were taken between the Tasker Lighthouse and Dublin Bay.

CONCLUSION.

I HAVE finished one of the many difficult and laborious tasks which I had imposed upon myself. Twelve years have elapsed since the first three volumes of this work were issued to the public, and I had scarcely hoped to see its completion, when I was most unexpectedly encouraged to revise the

manuscript of the two remaining volumes, containing the Wading and Swimming Birds, of which the history, in so far as I am acquainted with it, is now given on the same plan as that adopted for the Land Birds. Commenced in hope, and carried on with zeal, though ended in sorrow and sickness, I can look upon my work without much regard to the opinions which contemporary writers may form of it, assured that what is useful in it will not be forgotten, and knowing that already it has had a beneficial effect on many of the present, and will more powerfully influence the next generation of our home-ornithologists. I had been led to think that I had occasionally been somewhat rude, or at least blunt, in my criticisms; but I do not perceive wherein I have much erred in that respect, and I feel no inclination to apologize. I have been honest and sincere in my endeavours to promote the truth. With death, apparently not distant, before my eyes, I am pleased to think that I have not countenanced error, through fear of favour. Neither have I in any case modified my sentiments so as to endeavour thereby to conceal or palliate my faults. Though I might have accomplished more, I am thankful for having been permitted to add very considerably to the knowledge previously obtained of a very pleasant subject. If I have not very frequently indulged in reflections on the power, wisdom, and goodness of God, as suggested by even my imperfect understanding of his wonderful works, it is not because I have not ever been sensible of the relation between the Creator and his creatures, nor because my chief enjoyment when wandering among the hills and valleys, exploring the rugged shores of the ocean, or searching the cultivated fields, has not been in a sense of His presence. "To Him who alone doeth great wonders," be all glory and praise. Reader, farewell.

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